CHEMICAL INDUSTRIES


Calcium Chloride - War Worker!
In war, as in peace, Solvay Calcium Chloride is a versatile worker. It helps construct roads, buildings and airports *faster!* It protects food supplies. Removes the skid hazard from icy highways. Prevents freezing of metallic ores . . . coal . . . coke. It provides dependable fire protection, and takes part in many industrial processes.
CONCRETE CONSTRUCTION
AIRPORT CONSTRUCTION
HIGHWAY CONSTRUCTION
REFRIGERATION OF FOOD
FIRE PROTECTION
DUST CONTROL
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HIGHWAY ICE CONTROL
ANTI-FREEZE COAL AND IRON ORE
AIR DRYING

The Business Magazine for Makers & Users of Chemicals

Management, Research Production, Marketing

CHEMICAL INDUSTRIES

Contents

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NOVEMBER, 1942

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London: Quadrant House, 55-58, Pall Mall, London, S. W. I., Whitehall 6642

THE READER WRITES

Sources of Rare Chemicals

We are indeed pleased with your generous offer of cooperating with the National Registry of Rare Chemicals in locating sources for chemicals urgently needed.

We are enclosing a list of chemicals, some of which we have been trying to locate for several weeks. Since you undoubtedly would like to know the results obtained by publishing such lists in Chemical Industries we will keep a record of replies.

MARTIN H. HEEREN, Director,
National Registry of Rare Chemicals,
Armour Research Foundation,
Chicago, Ill.

Editorial Note: Below are listed the rare chemicals urgently needed. Please communicate directly with the Director of the National Research Foundation.

Calcium Silicide
Lichenin
Pepsinogen
1, 8 Dihydroanthraquinone
Calcium Sulfaguayacolate
Ergotamine Tartrate
2, 3, 5-trichlorophenoxy acetic acid
2, 3, 5-triiodophenoxy acetic acid
2, 4-diiodophenoxyacetic acid
2, 4-dichlorobenzoic acid
2, 3, 5-trichlorobenzoic acid
2-chloro, 3-nitrobenzoic acid
Glucose-6-phosphoric acid
Fructose Diphosphate
Phosphopyruvic acid
Phosphoglyceric acid
Dihydroxyacetone phosphate
Creatine phosphate
Acetoacetic Acid
alpha-Ketoglutarate
Phosphoglyceraldehyde
alpha-Phosphoglycerol
d-3-Phosphoglyceraldehyde
d-3-Phosphoglyceric Acid
alpha-Ketoglutaric Acid
Quinone dioxime dimethyl ether
Diquinoyl tetroxime
Diquinoyl dioxime
2, 4, 6, 2', 4', 6' Hexachloradiazoaminobenzene
Quinone-bis-beta Naphtylimine
Prophyrindien
5-Amino Nicotinic Acid
Di-Allyl Succinate
Diethyl Oleyl Amid Phosphate
2, 3 Dichlorobenzoic Acid
2-Chloro, 3-Nitrophenoxy Acetic Acid
2, 4-Dichloro-alpha-naphthalene Acetic Acid
2, 4-Dichloro-beta-naphthoxyacetic Acid
Disilicon Hexachloride
Quinizarin 6 sulfonic acid

August a Popular Issue

We have noted with interest two articles in the August issue entitled "Chemical Utilization of Wood Wastes" and "Recruiting Technical Personnel at Monsanto." We would like to have two reprints of each of these articles for our files and will appreciate your sending them to us if they are available. If there are any charges please advise.

J. O. BURTON,
Chief of Research,
Minnesota & Ontario Paper Co.
Minneapolis, Minn.

Editorial Note: Robert S. Aries, author of "Chemical Utilization of Wood Wastes" is busy completing a manuscript "Chemical Utilization of Farm Wastes" Part 1 of which will appear in the December issue.

Landis on "Industrial Planning"

The head of our laboratory has called my attention to Dr. Landis' article on "Industrial Planning" in the September issue of Chemical Industries If this article has been reprinted, I would like to obtain five copies of the reprint.

Please be good enough to let me know if these are available and if they are please have them mailed to me with bill covering same.

The presentation of this very important matter is an excellent one and I would like these copies for other officers of our company.

CHARLES E. BRADFORD,
Secretary,
The Todd Company,
Rochester, N. Y.

Editorial Note: Part II of Dr. Landis' article "Industrial Planning" appears in this issue.

Again the Subject of Patents

In line with our earlier correspondence regarding pending patent legislation, you will be interested, I think, in reading the enclosed reprint of an article by Roy C. Hackley, Jr., appearing in the current issue of the *Atlantic Monthly*.

You will find this article an excellent summary of the patent problem to date, with some very illuminating observations on the men and issues involved. It seems to me, however, that Mr. Hackley's penetrating and well-reasoned account falls down in one respect—the lack of emphasis placed upon the immediate and continuing need for thoughtful action on the part of all citizens to understand our patent system and to make intelligent use of it. None of the bills now before the Senate Committee have been passed, and many changes may take place before they become law.

The problem has not yet been settled, and attacks on patents are still current. In order to help prevent further attempts to rush through hasty wartime legislation, certain things should be done. First, the trade press must see that facts on patents and patent benefits are clearly presented to its readers and that free discussion is encouraged. Those individuals and industries using patents must make sure that they are not abusing the privileges granted them. Lastly, everyone concerned with the preservation of democratic processes must arrive at a clear understanding of the nature of patents and their function. Your magazine, by its continued emphasis on this important issue, can contribute greatly to the education of the public and thus help insure the intelligent correction of abuses and the preservation of the usefulness of the American patent system.

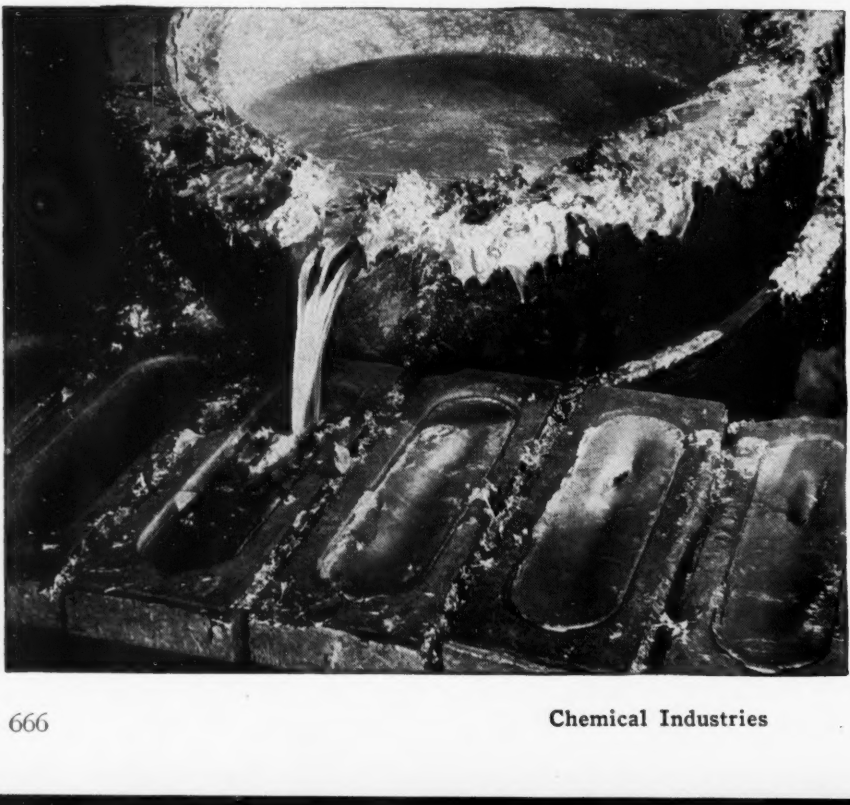
Editorial Note: The above communication is from an executive of one of the medium-sized highly progressive chemical companies. We call attention of all our readers to the article "Patents and the Public Interest" appearing in this issue.

Calendar of Events

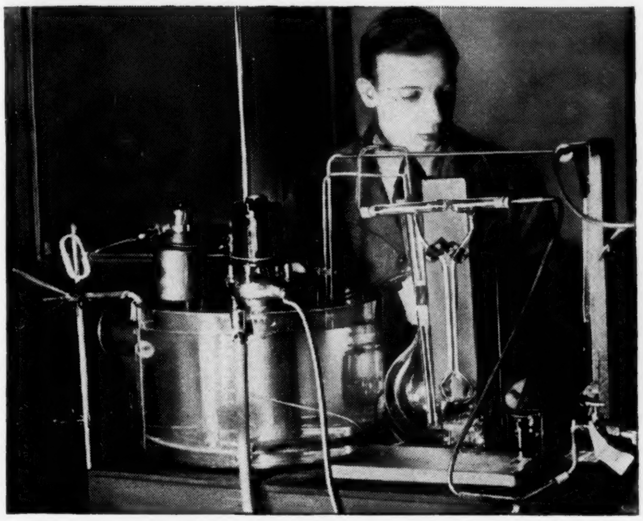
Nov. 16, Utah Paint, Varnish & Lacquer Ass'n, Monthly Meeting, Ambassador Hotel, Salt Lake City, Utah.
Nov. 16-18, American Institute of Chemical Engineers, 35th Annual Meeting, Netherland Plaza Hotel, Cincinnati, O.
Nov. 17-18, National Farm Chemurgic Council, Third Mid-American Conference, Cincinnati, O.
Nov. 19, Chicago Drug and Chemical Assoc., Monthly Luncheon, Union League Club, Chicago, Ill.
Nov. 19, New England Paint and Varnish Production Club, Regular Meeting, Hotel Vendome, Boston, Mass.
Nov. 20, Baltimore Paint, Varnish & Lacquer Assoc., Regular Monthly Meeting, Belvedere Hotel, Baltimore, Md.
Nov. 23-24, Scientific Apparatus Makers Ass'n Mid-year Meeting Lab. App. and Optical Divisions, Bismarck Hotel, Chicago, Ill.
Nov. 24, Toledo Paint, Varnish & Lacquer Association, Luncheon, Hotel Secor Coffee Shop, Toledo, Ohio.
Nov. 30, Association of Consulting Chemists & Chemical Engineers, Inc., Council Meeting, The Chemists' Club, New York, N. Y.
Nov. 30-Dec. 1, National Industrial Council, Waldorf-Astoria Hotel, New York, N. Y.
1st wk. of Dec. Chemical Section of National Safety Council, Annual Meeting, New York City.
Dec. 2, American Institute of Consulting Engineers, Luncheon & Council Meeting, City Midday Club, New York City.
Dec. 2-4, National Association of Manufacturers and the Congress of American Industry, Waldorf-Astoria Hotel, New York, N. Y.
Dec. 3, Indianapolis Paint, Varnish & Lacquer Assn., Regular Monthly Meeting, Columbia Club, Indianapolis, Ind.
Dec. 4, Society of Chemical Industry, New York City.
Dec. 2-4, National Association of Manufacturers and the Congress of American Industry, Waldorf-Astoria Hotel, New York City.
Dec. 3, Indianapolis Paint, Varnish & Lacquer Assoc., Regular Monthly Meeting, Columbia Club, Indianapolis, Ind.
Dec. 4, Society of Chemical Industry, Regular Meeting, The Chemists' Club, New York, N. Y.
Dec. 7 & 8, National Ass'n Insecticide & Disinfectant Mfrs., Inc., Annual Meeting, Hotel Roosevelt, New York, N. Y.
Dec. 8-9, American Management Assoc. (Insurance Conference) Drake Hotel, Chicago, Ill.
Dec. 10, American Standards Assoc. (Annual Meeting) Hotel Astor, New York, N. Y.
Dec. 11, American Chemical Society's New York Section, New York City.
Dec. 12, Chicago Perfumery, Soap and Extract Assn., Christmas Party, Grand Ballroom, Hotel Sherman, Chicago, Ill.
Dec. 15, Maryland Section of American Institute of Chemical Engineers, General Meeting, Blackstone Hotel, Baltimore, Md.
Dec. 17, Chicago Drug and Chemical Assoc., 40th Annual Christmas Banquet, Drake Hotel, Chicago, Ill.
Dec. 17, New England Paint & Varnish Production Club, Regular Meeting, Hotel Vendome, Boston, Mass.
Dec. 18, American Chemical Society, New York Group (Rubber Div.) Building Trades Club, New York, N. Y.
Dec. 18, Baltimore Paint, Varnish & Lacquer Association, Christmas Party, Belvedere Hotel, Baltimore, Md.
Dec. 21, Utah Paint, Varnish & Lacquer Ass'n, Monthly Meeting, Ambassador Hotel, Salt Lake City, Utah.
Dec. 28, Association of Consulting Chemists & Chemical Engineers, Inc., Council Meeting, The Chemists' Club, New York, N. Y.

Life ON THE CHEMICAL NEWSFRONT

(*Right*) **EFFECTIVE SCREENS** to hide strategic objectives from the eyes of hostile observers can be quickly and simply produced with the aid of batteries of smoke pots like the one illustrated. Every time you buy a $25 U. S. War Savings Bond, your investment can be used to purchase almost seven of these smoke pots to help guard vital military or industrial installations. You can most effectively aid the nation to finance the purchase of urgently needed equipment for the armed forces by placing your buying of War Bonds or Stamps on a consistent basis. The Payroll Savings Plan of the Treasury Department provides a convenient means of allocating a portion of income, regularly every payday, for this purpose. All of Cyanamid's plants and offices are now operating under the voluntary payroll allotment plan.

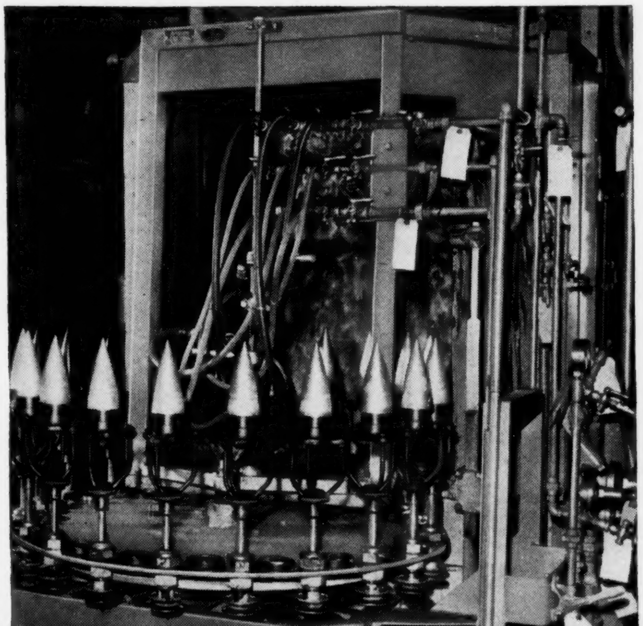


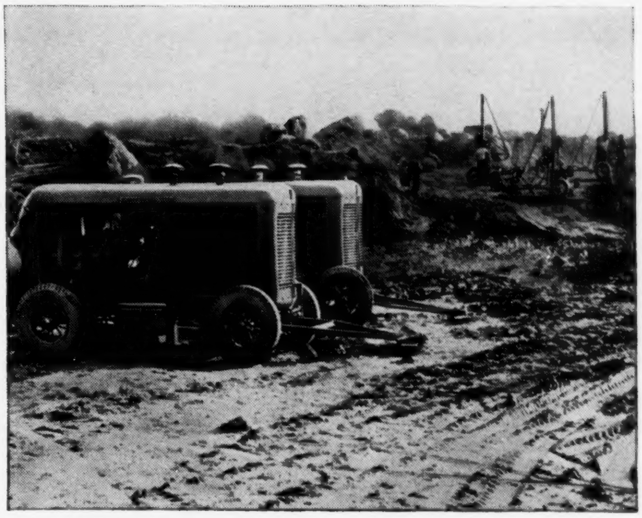
(*Left*) **ARKANSAS BAUXITE** will soon be processed into metallic aluminum in giant new plants located at the source of the ore, thus permitting outstanding transportation economies. Previous procedure was to transport the ore, with its inevitable proportion of superfluous weight, to be processed by plants in other areas. With the on-the-spot processing, the ore will be converted into alumina at the mine, and the oxide reduced to aluminum. Freed from excess weight, the aluminum can be conveniently flown to any desired location for casting into ingots, as shown in the photograph, and for rolling, forging, or extruding into useful shapes. As a major supplier of Arkansas bauxite, Cyanamid will play an important part in furnishing the ore for these new plants. In addition to its vital role in aluminum production, bauxite is of outstanding importance in the manufacture of the extremely fine, hard abrasives required for the rapid precision finishing of a wide variety of metal parts. Bauxite is also converted into aluminum sulphate—a valuable material for purifying water supplies by coagulating the organic and inorganic matter and carrying it to the bottom.



(*Above*) **CHEMICAL SCENTS** lure insects into traps by simulating the odor of the plants to which the insects are naturally attracted. Dr. Vincent G. Dethier, working at John Carroll University, made extensive studies of this method of combating insect pests, and considerable success is reported to have been attained with tent caterpillars, carrot worms, and cabbage worms. Dr. Dethier is shown here with his olfactometer—an instrument that makes it possible to determine the relative efficacy of various chemicals in attracting different types of insects.

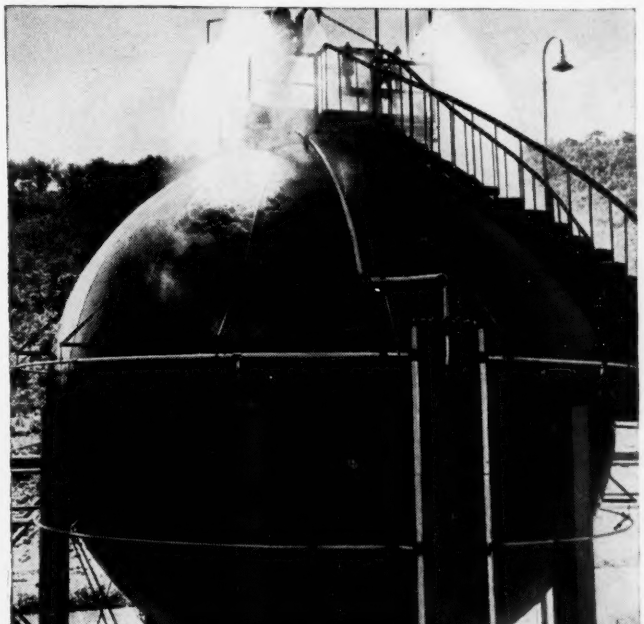
(*Below*) **COATINGS FOR ARMOR-PIERCING SHELLS** must meet exacting requirements, calling for the highest quality of materials in the formulation of finishes. Cyanamid's line of materials for paint and lacquer manufacture aids the formulator in meeting difficult specifications—and Cyanamid research is constantly carried on to develop new materials for coating, to improve the quality and increase the utility of existing ones.





(*Above*) **CYANAMID'S MELMAC* PLASTIC** is expected to find widespread usefulness in heavy-duty equipment such as these air compressors, which must often operate under extreme conditions of dust and humidity—a combination that may cause failure of many insulation and ignition assembly parts. Tests show that when MELMAC Plastic parts are used, the dangers of electrical breakdown are minimized, because of this new insulating material's high arc resistance of 145 and high dielectric strength of 382-403 volts per mil at 100° C.

(*Below*) **BUTADIENE IS STORED** in tanks like this, constantly cooled by water spray to prevent premature polymerization. As synthetic rubber production is rushed to meet growing demands, Cyanamid has expanded its facilities for making aniline and beta-naphthol—sources of many of the most important vulcanization accelerators for both natural and synthetic rubber, as well as of many rubber anti-oxidants.



WASHINGTON

By T. N. Sandifer

NO matter which way the elections had gone the Administration at Washington had drawn in advance the most salient conclusion—that the people want results in the war, and from here out will be tough in demanding accountability for success or failure. That is very evident in Washington.

Even if the President, after his secret pre-election tour of the country, had not come back to Washington and self-righteously rebuked his under-strappers for over-zealously belaboring the public for its alleged shortcomings in the war effort, it is a safe venture that precious little of this kind of talk will be heard again.

From last December to the present, there has been expended roughly $40 billions on the war. The public is going to be finding the money shortly after the first of the year for that due-bill. If this seems like a lot to some who will be heavy tax-payers for the first time in this war, the news, just becoming known, that the coming year's outlay for the war will be $100 billion will be overwhelming. Doubly so, because about the time of this realization on the tax-payer's part, he will learn, as Washington already knows, that a large part of this fantastic amount of money is going to be found in his clothes somehow. Furthermore, he will be paying it as it is spent, according to present plans—pay-as-you-go, in other words.

T. N. Sandifer

The average citizen will swallow this news, when he hears it, because he is a patriot; he will at the same time be enduring for the first time his first real rationing, not sugar but meat and even things he has hitherto regarded as inexhaustible staples, butter, cheese, and some other things. The Administration, knowing what is coming, has already realized therefore, that breaking bad war news to an American public under these circumstances is going to be a real test.

Nobody in Washington questions the public's willingness to face bad news, but they do wonder seriously if the public will accept such tidings without in turn, asking some searching questions. The first effects of this more challenging attitude are now making themselves felt in less direct ways.

One of these is the reluctance of the Treasury to bring out a second tax bill just yet. This is an almost overnight modification of its previous disposition. There was a time when talk of new taxes, all emanating from the Treasury, or from those in touch with that department, was almost blatant. Then some hard-headed members of the House Ways and Means Committee, and some on the Senate side, began to talk back. The Administration's attempt to put over a $25,000 salary limitation, in the face of pre-tax bill declarations in Congress that such a policy would not be voted into law is feeling some of this new Congressional independence. There are predictions heard in Washington that this campaign, for that is all it is, will just lapse in due time. Otherwise definitive Congressional action is foreseen to check-mate ambitious New Dealers, before they try still other ideas out on the public.

A new tendency in Washington is just beginning to be manifest; outstanding Leftish New Dealers are burrowing a little deeper in their niches around the city, seeking to get into ostensible second or third-string positions, and allowing some more acceptable incumbent to hold actual top office honors. They still can do a lot of policy-drafting from their nominally subordinate desks. However, it is significant of several of such efforts lately that they were stopped cold in Congress. What the incoming Congress will do to any further such master-minding efforts is a subject of speculation.

A comparatively minor rebellion that has attracted little public notice was staged by business firms in recent months, over the matter of the endless questionnaires and forms that were plaguing them from Washington. While it is a small straw, compared to some much larger issues, it is to be noted that the uprising was successful. The amount of paper-work now inherent in doing business with Washington will remain large, but has been measurably whittled down.

The Chemical Branch was credited with assistance in this connection, through its development of two standard forms to be used for allocating all chemicals, which replace an almost innumerable number of others, and eliminate almost 40 per cent of the contents of those replaced. There went on exhibition at all local WPB offices late in October, a list of forms which will continue in use, covering all products, not chemicals alone. Before filling out any form not listed in such exhibit companies were advised to address the Committee for Review of Data Requests, Social Security Building, Washington, to learn if use of the form in question is still required.

On other Washington fronts, some things to watch in the near future include the following;

Inventories—Before this appears an order establishing some form of control over inventories of finished consumers' goods of wholesalers, retailers, and manufacturers throughout the country, may already have been issued. At this writing it is in the making. However, some earlier findings, on which this plan is based, indicate that while heavy inventories have been the case in certain other fields, those of drug systems, among others, have been below normal in relation to sales.

Manpower—While formal legislation apparently has been deferred, it is considered wise to regard this hesitation as purely a pre-election manifestation. Afterward now that the votes are in, forces in favor of this program are likely to become active again. Advice has been given to specific industries, by the responsible Federal agencies, such as ODT, for instance, in the case of transportation, to keep ready an inventory of personnel This is good advice for all industries at present, in view of the tightening labor situation.

The inventory should classify employees, both with a view to actual demands from the current draft, and for reference in event of future man-power legislation. The classifications are constantly being drawn tighter at Washington, so far as selective service is involved, so that it is increasingly necessary to know the potentialities as they affect each industry' departments.

Containers—Critical materials for man-

(*Continued on page* 761)

LAST
NEWS
TIME D
FOR C.I

SECOND ALLOCATION REPORT

WASHINGTON, Nov. 16—Chemicals Division of the War Production Board today released its second monthly report on allocations of individual chemicals. The November report covering more than $50,000,000 worth of scarce chemicals lists each chemical involved and gives the percentage of requests allowed for each use. Requests for chemicals for listed civilian end uses were granted in large part with respect to chlorine, phosphorous, butyl alcohol and sodium nitrate. General tightening up was revealed in the case of benzene with allocations for manufacture of aniline for dyes and intermediates being cut from 80% in October to 75% this month, and in the use of benzol which was cut from 40% to 30% in the same period. Allocations of glycerine with respect to users of more than 10,000 pounds a month were granted in full for high rating drugs and pharmaceuticals, explosives, alkyd resins, ester gums, rubber products, plastics, wrappings, printing, textiles, paper, cosmetics, and several others.

NFA MEETS

ATLANTA, Ga., Nov. 16—The National Fertilizer Association at its annual southern convention outlined a plan for the equitable distribution of fertilizer and fertilizer materials. The plan calls for a distribution of materials largely in accordance with past usage, except that in some areas special consideration will be given to crops that are urgently needed.

ENGINEERS MEET

CINCINNATI, Nov. 16—Speaking before the 35th annual meeting of the American Institute of Chemical Engineers, Lt. Col. James C. Sawders, chief of the plant protection and safety branch of the Chemical Warfare Service, said that measures taken by the Government and industry against saboteurs were being tightened as the war progresses. J. L. Bennett, manager of chemical operations, explosives department, Hercules Powder, was elected president. Other officers elected today to serve with Mr. Bennett are George G. Brown, professor of chemical engineering, University of Michigan, vice president; Stephen L. Tyler, New York city, secretary; and C. R. DeLong, New York city, treasurer. The following directors were elected to serve for a term of three years each: Lawrence W. Bass, assistant director, Mellon Institute, Pittsburgh; Barnett F. Dodge, head of the department of chemical engineering, Yale University; Chester Lewis Knowles, chemical sales director, Dorr Co., New York city; and Charles M. A. Stine, vice president, E. I. du Pont de Nemours & Co., Wilmington, Del.

HOPE FOR ARGOLS

FRENCH NORTH AFRICA—There is some possibility that American ships returning from here will bring back cargoes of argols from the country's

wine industries and thus help chemical producers of tartrates in this country. Before the war, bulk of U. S. supplies came from Southern Europe, Spain and North Africa. California's grape industry can't meet the demand and some producers insist that our argols aren't as productive as the imported. (We don't leave the wine in the casks long enough, it seems.)

PENALIZED BY OPA
BUFFALO, Nov. 16—The Greater Buffalo Press, Inc., operating under the name of Chemical Process & Supply Co., has been denied for six months all priority assistance by the Office of Price Administration. Company, it seems, according to OPA charges, obtained and used in the manufacture of printing inks during April, May and June some 8,000 pounds of organic pigments to which it was not entitled under the order issued to conserve these scarce materials. During July and August the company allegedly obtained and used illegally an additional 25,600 pounds of the restricted pigments.

YOU NEED PRESCRIPTION FOR RUBDOWN NOW
WASHINGTON, Nov. 11—Unrestricted sale of rubbing alcohol and rubbing alcohol compounds was forbidden by an amendment to M-30 today. It forbids the delivery of any ethyl alcohol or any compound containing it for use as rubbing alcohol except to licensed physicians, dentists and veterinarians, holders of written doctor's prescription orders and wholesalers, retailers and manufacturers in accordance with the terms of the order, and to certain government agencies. Action will save about 2 million gallons yearly.

EIGHT CANDIDATES FOR ACS PRESIDENCY
NEW YORK CITY, Nov. 16—Eight candidates have been nominated for the presidency of the American Chemical Society, largest professional organization of its kind in the world. The nominees, proposed by the Society's local sections, will be voted for by mail. The four receiving the largest number of votes will go before the Council, governing body of the Society, for election.
The winner will become president-elect of the Society on January 1, 1943, and president on January 1, 1944. Dr. Per K. Frolich, director of the Chemical Division, Esso Laboratories of Standard Oil Development Company, Elizabeth, N. J., and internationally known for his work in the development of synthetic rubber, will succeed Dr. Harry N. Holmes, head of the Department of Chemistry of Oberlin College.
The list of candidates follows: Thomas A. Boyd, General Motors Corp. Professor Carl S. Marvel, University of Illinois. Dr. Thomas Midgley, Jr., Ethyl Corp. Professor Linus C. Pauling, California Institute of Technology. Professor W. T. Read, Rutgers University. Ernest H. Volwiler, Abbott Laboratories. Professor Hobard H. Willard, University of Michigan. Robert R. Williams, Bell Laboratories.

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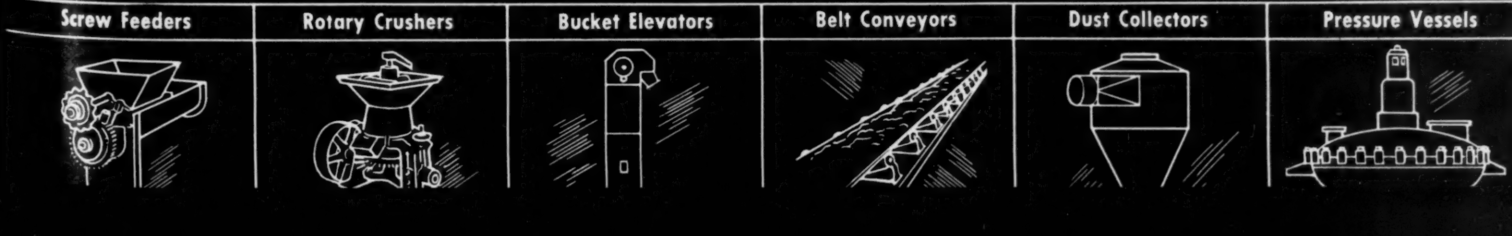

STOP LOSSES ... FROM CORROSION AND THERMAL SHOCK

IN EQUIPMENT DESIGNED FOR THE PRODUCTION OR USE OF

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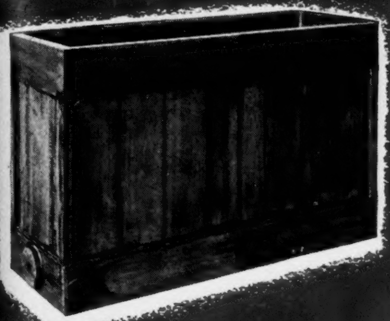

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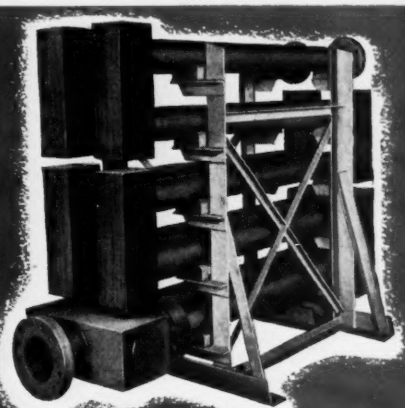
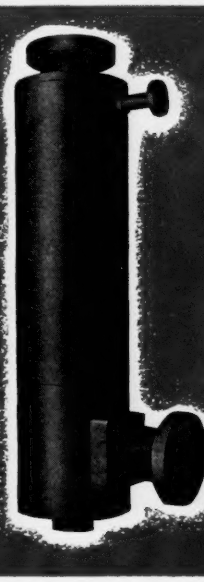
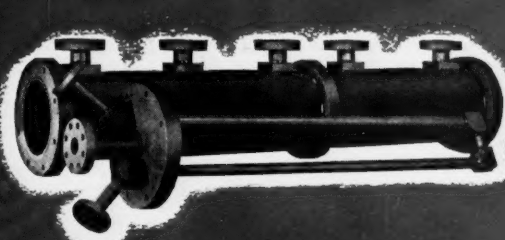
CARBON AND GRAPHITE MATERIALS



FOR THE CONSTRUCTION OF PROCESSING UNITS





* The words "National" and "Karbate" are trade-marks of National Carbon Company, Inc. The trade-mark "Karbate" identifies a line of carbon and graphite base materials impervious to seepage of liquids and gases under pressure.

● Carbon, graphite and "Karbate" materials are used in the construction of equipment for all processes involved in the manufacture or use of hydrochloric acid. This includes absorbing, cooling, rectifying, boiling and condensing units, conveying and circulating systems, vats, tanks and other containers.

These materials are resistant to the action of hydrochloric acid in all phases and concentrations. The excellent heat transfer properties of graphite base materials are of advantage in equipment used for heating, cooling and stripping processes. Good mechanical strength, exceptional resistance to thermal shock, ease of machining, and availability in a wide variety of forms adapt these products to the fabrication of practically any desired type of processing equipment.

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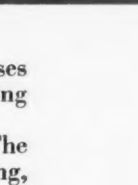
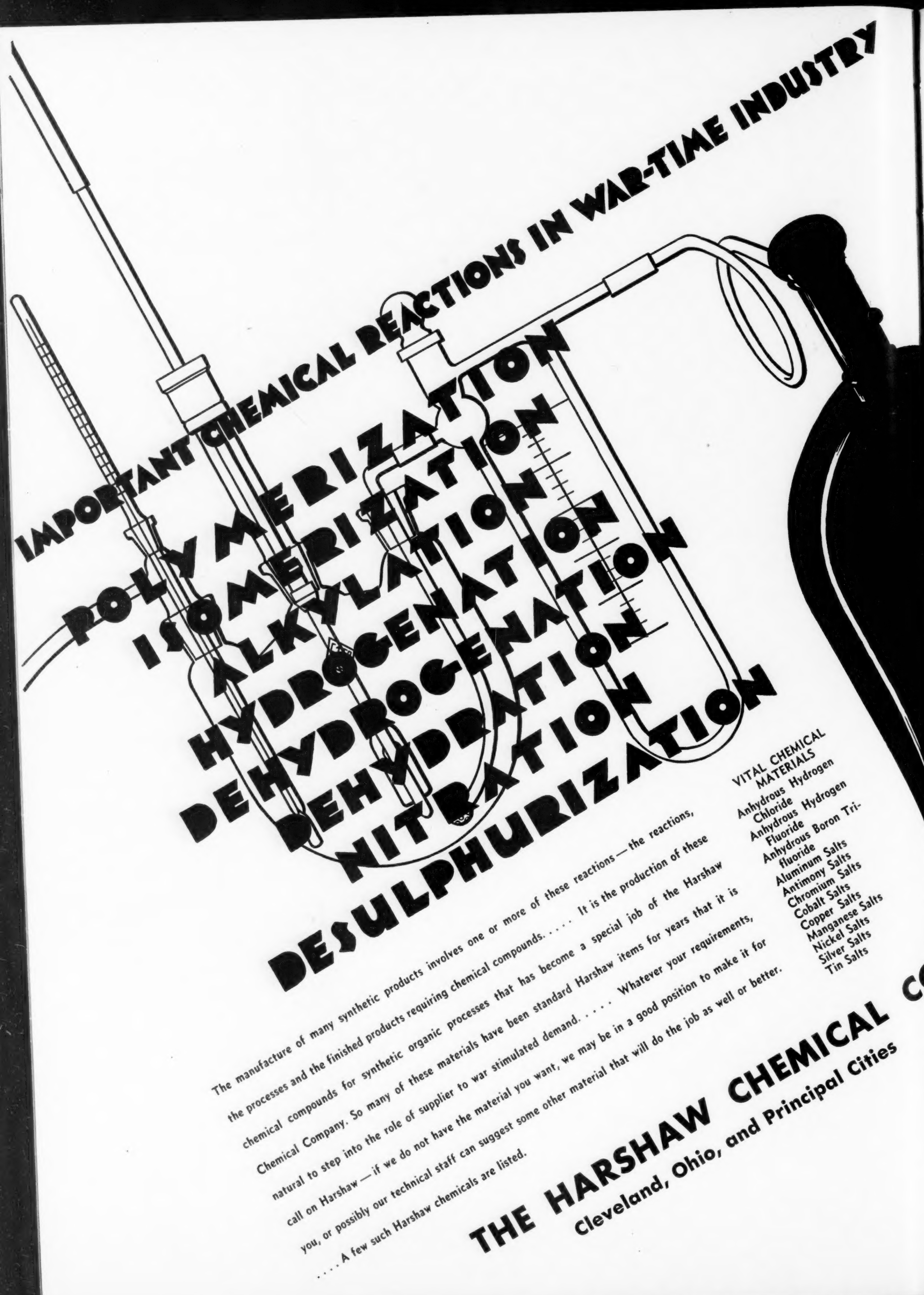
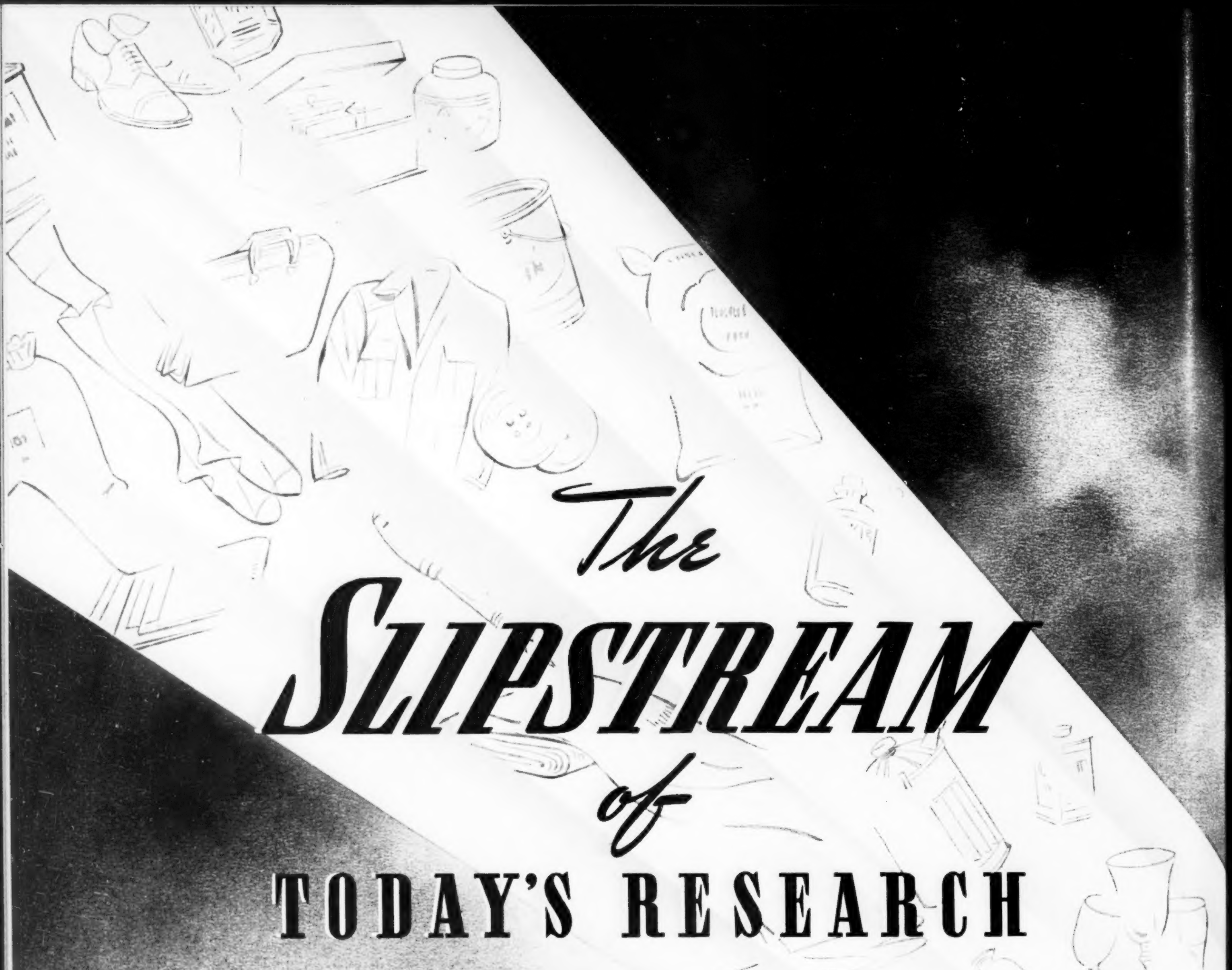


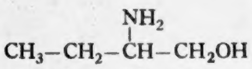

IMPORTANT CHEMICAL REACTIONS IN WAR-TIME INDUSTRY
POLYMERIZATION
ISOMERIZATION
ALKYLATION
HYDROGENATION
DEHYDROGENATION
DEHYDRATION
NITRATION
DESULPHURIZATION
VITAL CHEMICAL MATERIALS
Anhydrous Hydrogen Chloride
Anhydrous Hydrogen Fluoride
Anhydrous Boron Tri-fluoride
Aluminum Salts
Antimony Salts
Chromium Salts
Cobalt Salts
Copper Salts
Manganese Salts
Nickel Salts
Silver Salts
Tin Salts
The manufacture of many synthetic products involves one or more of these reactions—the reactions, the processes and the finished products requiring chemical compounds. . . . . It is the production of these chemical compounds for synthetic organic processes that has become a special job of the Harshaw Chemical Company. So many of these materials have been standard Harshaw items for years that it is natural to step into the role of supplier to war stimulated demand. . . . . Whatever your requirements, call on Harshaw—if we do not have the material you want, we may be in a good position to make it for you, or possibly our technical staff can suggest some other material that will do the job as well or better. . . . . A few such Harshaw chemicals are listed.
THE HARSHAW CHEMICAL CO
Cleveland, Ohio, and Principal Cities

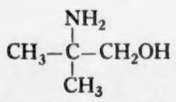


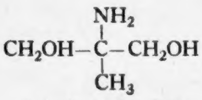
VERSATILITY of the Aminohydroxy Compounds is indicated by these *Typical Reactions:*

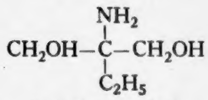
The Aminohydroxy Aliphatics

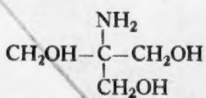
(derived from the Nitroparaffins)


2-Amino-1-butanol

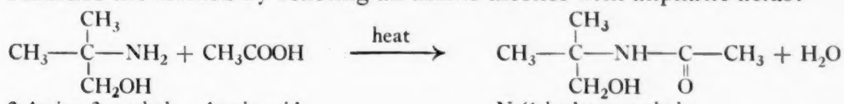

2-Amino-2-methyl-1-propanol


2-Amino-2-methyl-1, 3-propanediol


2-Amino-2-ethyl-1, 3-propanediol

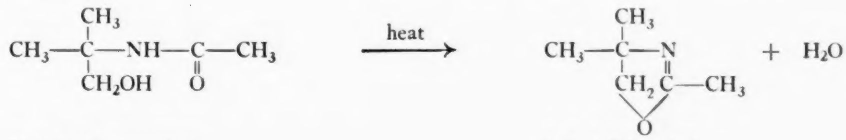

Tris (hydroxymethyl)-aminomethane

Amides are formed by reacting an amino alcohol with aliphatic acids:



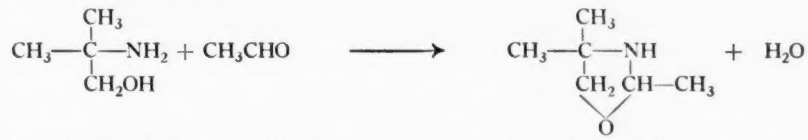
2-Amino-2-methyl-1-propanol — Acetic acid — N-(1-hydroxymethyl-isopropyl) acetamide

Substituted Oxazolines are derived from the aliphatic or fatty acid amides:



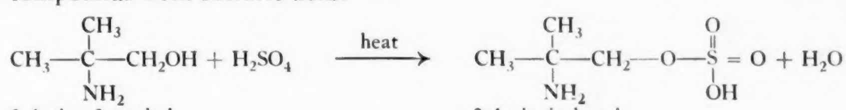
N-(1-hydroxymethyl-isopropyl) acetamide — 2, 4, 4-Trimethyl-2-oxazoline

Substituted Oxazolidines are made by condensing aminohydroxy compounds with aldehydes:



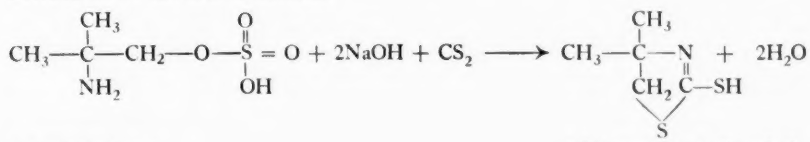
2-Amino-2-methyl-1-propanol — Acetaldehyde — 2, 4, 4-Trimethyl-oxazolidine

Aminoalkyl Hydrogen Sulfates are obtained on treating aminohydroxy compounds with sulfuric acid:



2-Amino-2-methyl-1-propanol — 2-Aminoisobutyl hydrogen sulfate

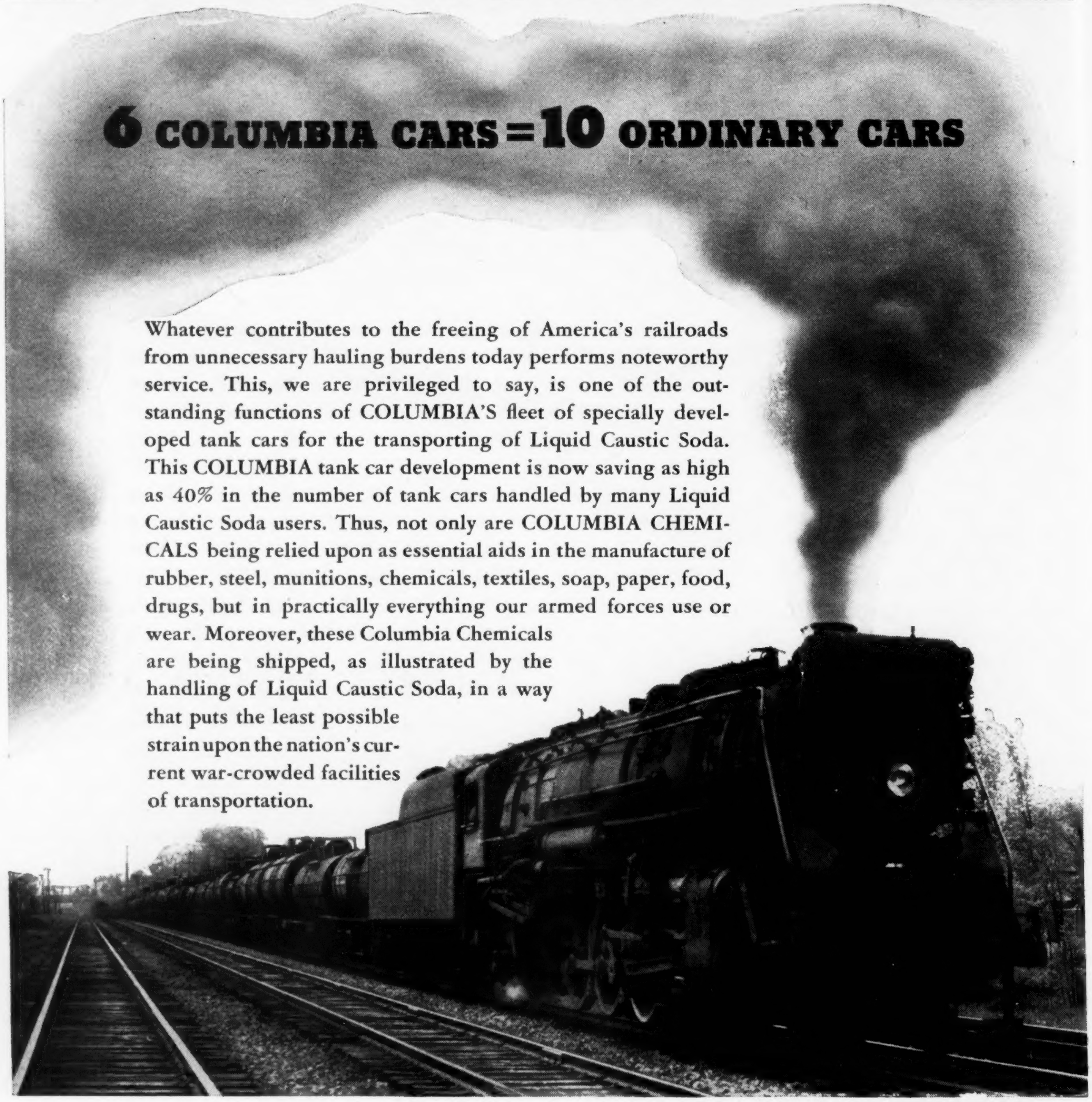
Mercapto Thiazolines are made by condensing aminoalkyl hydrogen sulfate with carbon disulfide:

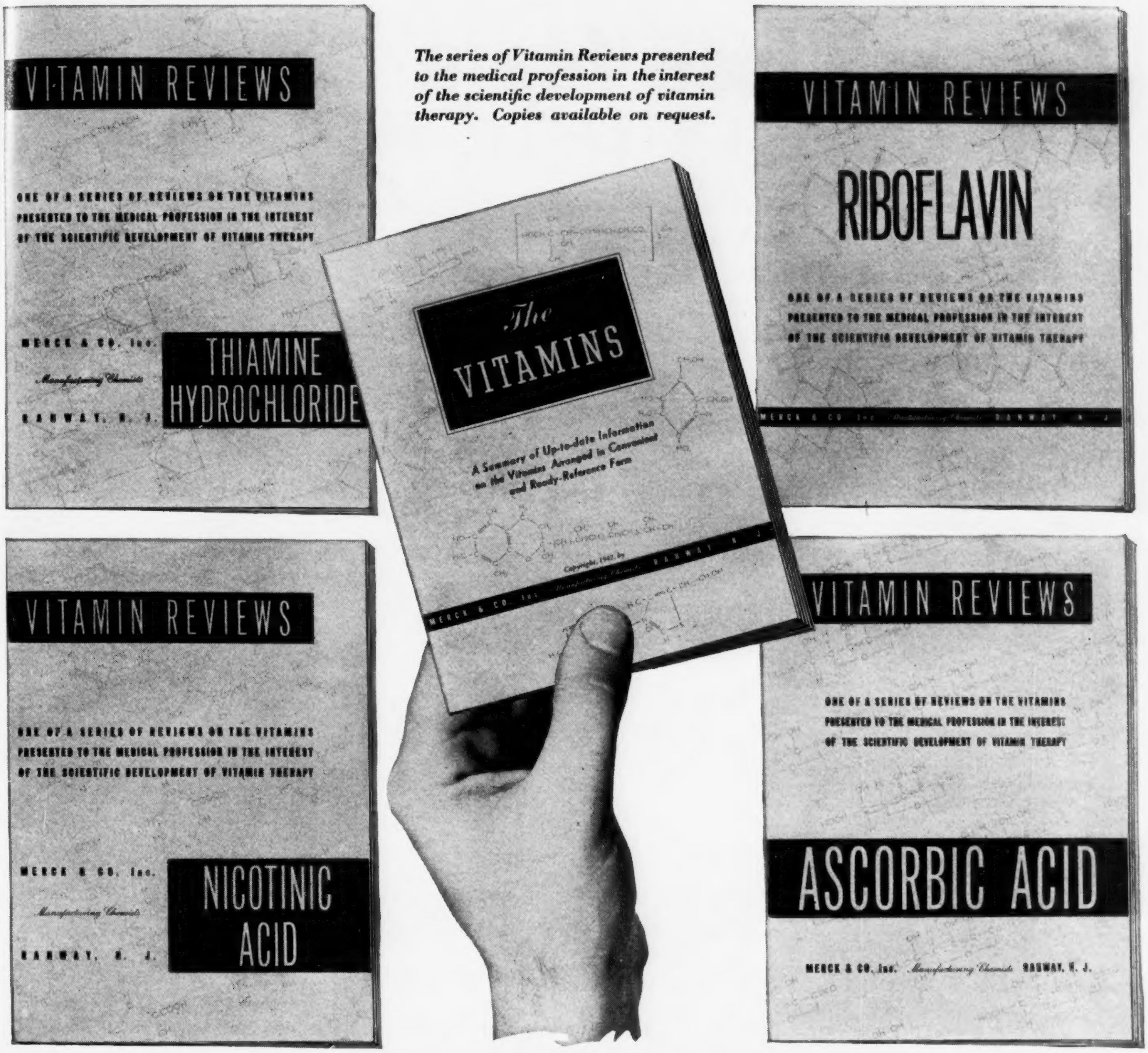


2-Aminoisobutyl hydrogen sulfate — 2-Mercapto-4, 4-dimethyl-2-thiazoline

The Nitroparaffins at Work will be featured in our exhibit at the National Chemical Exposition in Chicago, November 24th to 29th. You are cordially invited to visit our Booth.

Chemists are finding many helpful suggestions in the Data Book, "The Nitroparaffins—New Worlds for Chemical Exploration." A copy will gladly be mailed you on request.





The series of Vitamin Reviews presented to the medical profession in the interest of the scientific development of vitamin therapy. Copies available on request.

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THE nation-wide distribution of concise, authoritative, professional literature on the vitamins, by Merck & Co. Inc. at regular intervals to approximately 150,000 physicians, constitutes an important service both to the physician, and to the manufacturer of ethical vitamin preparations.

With a greater understanding of the biological activity of the various vitamins, increased ability to recognize the many signs and symptoms of vitamin deficiency, and familiarity with recently established requirements and dosage, the physician is better equipped to prescribe reputable vitamin preparations, and is encouraged to do so.

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The Merck scientific staff and laboratories are prepared to serve you in manufacturing problems involving the use of pure vitamins in your preparations.

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FOR VICTORY BUY WAR SAVINGS BONDS AND STAMPS

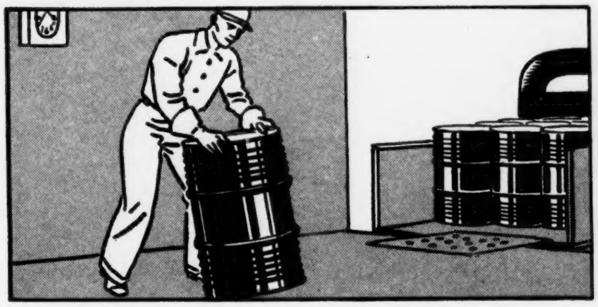
MERCK & CO. Inc. *Manufacturing Chemists* **RAHWAY, N. J.**

New York, N. Y. • Philadelphia, Pa. • St. Louis, Mo. • Elkton, Va. • Chicago, Ill. • Los Angeles, Cal.

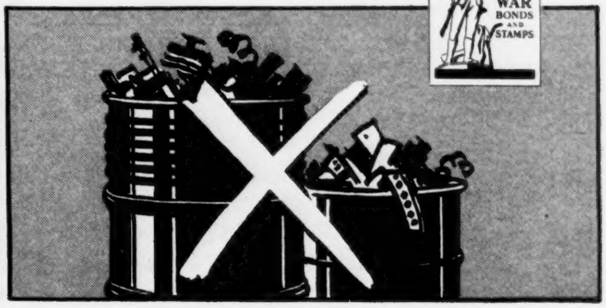
***In Canada:* MERCK & CO. Limited, Montreal and Toronto**

MAKE THE BEST OF WHAT WE HAVE

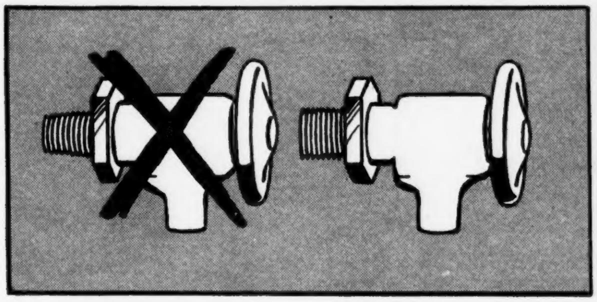
Drums and tank cars form the necessary supply line from the chemical manufacturer to your plant—without them it is impossible to ship the synthetic organic chemicals you need. Now it is more important than ever before that empty drums and tank cars be immediately returned—in good condition—to speed present deliveries and to insure future deliveries. To insure maximum use of every drum, please . . .



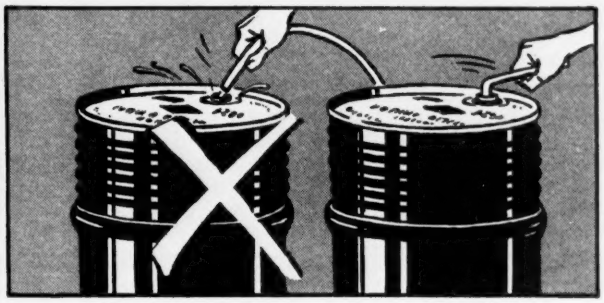
1. Return drums to the plant from which they came as soon as they are empty.



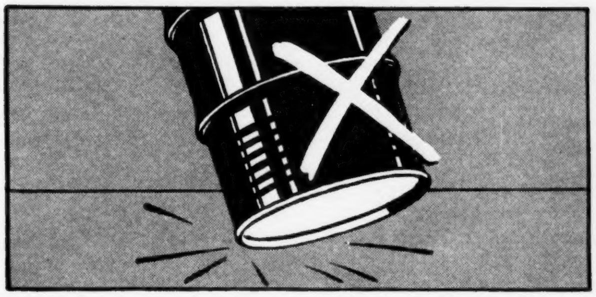
2. Don't use drums for transporting or storing other materials.



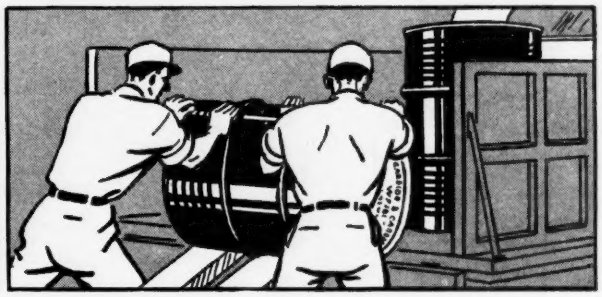
3. Use straight, threaded spigots. Tapered, threaded spigots tear out bungs.



4. Don't rinse empty drums. For return shipment just replace bungs tightly.



5. Handle drums with care. Dropping drums will spring the seams, and ruin them for further use.



6. Safety First! Always roll or hoist drums off and on trucks or loading platforms.

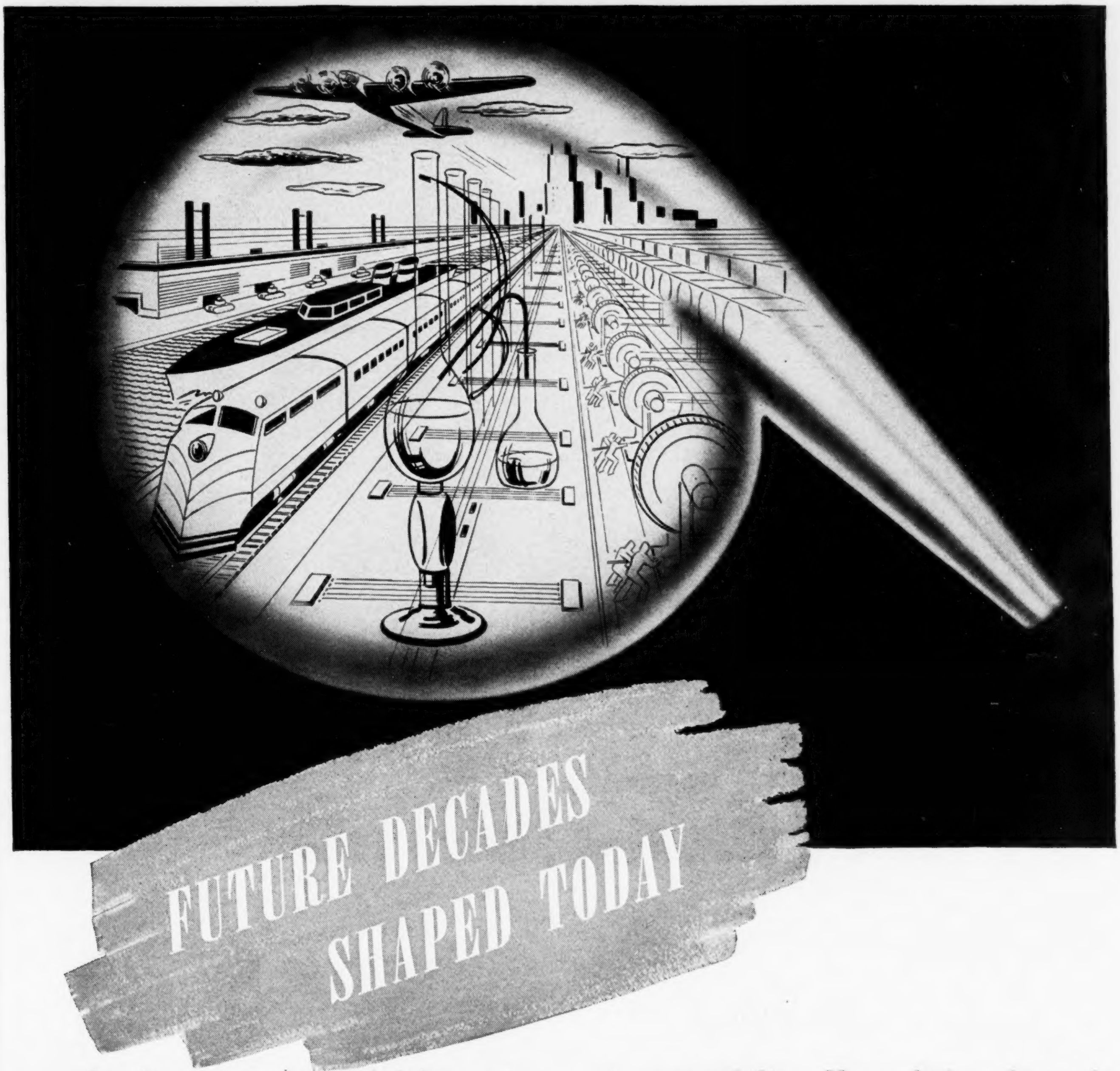
Reprints of this advertisement suitable for posting on bulletin boards are available without charge.

CARBIDE AND CARBON CHEMICALS CORPORATION

Unit of Union Carbide and Carbon Corporation

30 East 42nd Street UCC New York, N. Y.

PRODUCERS OF SYNTHETIC ORGANIC CHEMICALS



In the many chemical laboratories where modern marvels are being wrought, future decades are taking shape under our very eyes. Yesterday's achievements have become antiquities, and its farthest horizons are already at our backs.

In this far-reaching progress, HOOKER laboratories are shouldering their full share of responsibility. Never before have the chemists of this country had a greater profusion of chemicals, more uniformly controlled quality, more fully known properties or a greater fund of technical assistance.

HOOKER is glad indeed to be so fortunate in its ability simultaneously to serve chemists, chemistry and our Country.

HOOKER
ELECTROCHEMICAL COMPANY
NIAGARA FALLS, NEW YORK
NEW YORK CITY • TACOMA, WASHINGTON

3054 A

into the cauldron of war...

Pound by pound, ton by ton, carload by carload, America's scrap is coming in.

It can't come in too fast.

For scrap is the stuff of which the materials of war are made. The cheapest stuff and, for many uses, the best.

Soda ash is used to remove sulphur and other impurities from molten iron. It makes possible the production of sound, durable iron products even though increased percentages of scrap are used. It also permits the use of lower grade scrap.

Michigan Alkali Soda Ash, along with many other Michigan Alkali Products, is going to war in many ways, for many industries.

Let's all get in the scrap, and win!

WYANDOTTE

MICHIGAN ALKALI COMPANY

WYANDOTTE, MICHIGAN

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FIFTH COLUMNISTS
that have been overlooked

VERMIN and bacteria have always been the great destroyers of food stuffs and perishable materials of armies operating in the tropics. The slightest crack or invisible opening in ordinary packaging is a broad avenue of attack for these microscopic fifth columnists. But now our fighting men not only are armed with steel, but maintain full physical strength on supplies kept fresh and pure in steel containers. These sealed, air tight drums and pails cannot be penetrated by tropical bacteria or any other exterior contaminating contact.

STERI SEALD LINED STEEL CONTAINERS

provide safe packaging for sensitive materials and foods. Years of research and tests in our laboratory have enabled us to meet many exacting requirements in packaging perishable products for shipment all over the world.

The severe test that war conditions have imposed on Steel Containers in world wide shipments is eloquent endorsement of these containers as guardians of product purity for use under less strenuous conditions.

WILSON & BENNETT
Steri Seald
LINED STEEL CONTAINER
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CHICAGO
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WILSON & BENNETT MANUFACTURING CO.

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Subsidiary of Inland Steel Company

Plants at Chicago, Jersey City, New Orleans and Richmond, Cal. ● Sales offices in principal cities

Makers of Steel Drums and Pails

Autocrat of the Manning Table

THESE few words are about manpower. There have been many words written on the subject; there will be many more to come. This is not the first time we have written about manpower either. Whether this will be the last depends upon how well the chemical industry fares. Lord knows it cannot be said that we have not tried to warn you.

By the end of 1943 this country will be faced with a serious shortage of manpower. Of that every one is now certain. Fortunately, we think, the man most cognizant of the problem we now face is the man in whose lap the problem has been dumped for the solution—Paul V. McNutt.

We cannot make a complicated problem of this manpower question no matter how hard we try because it all boils down to simple arithmetic. If you have four apples and you eat two you only have two left. No man in the country realizes better than Mr. McNutt that it's a simple problem of addition and subtraction. And that's what makes this publication feel that the solution is not too hard to find.

But as this magazine has repeatedly tried to point out too many chemical companies have given very little, if any, thought to formulating plans for replacing men of draft age with older men and with women.

Look at the simple arithmetic. If we reach an army of 9,000,000 men by the end of 1943 (and this is all supposition, mind you) we shall be faced with an overall labor shortage of about five and one-half million. Where will they come from? They cannot come from the present labor force. That leaves the physically-handicapped, the over-age group, the women and the non-essential industries to draw upon. Take it from us, this is exactly what is going to happen and perhaps sooner than you think.

The clear facts are these: before this little job is over, every able-bodied man will be in the army. And before this war is won every man, woman and child over 14 years of age will have a part to play in winning it.

Now let us consider some of the things that are going to be done in solving this problem. There is going to be legislation on the manpower question. You can't get away from it in spite of all our dreams about no need for regimentation. One of the reasons for this is the fact that skilled persons in less essential occupations will not voluntarily change to more essential jobs. Government officials know this to be a fact. Paul McNutt says that in all government requests for changes of this sort so far, less than ten percent have been successful.

Let's look at another one: voluntary enlistments will be out. War industries suffer tremendously from voluntary enlistments—the ratio is about four to one as compared with the draft. This change is not far away, either. Further, dependency is on the way out as a cause for deferment. Total war means total participation. On the heels of all this we are going to see a national registration (not a draft, necessarily) of women. When we talk of our manpower reserve now we've got to include our womanpower.

It must be apparent to you by now that men *and* women, both skilled and unskilled, required to maintain capacity production of essential and war industries must be supplied from those *not* required for military service. And they must be supplied as rapidly as possible. That means releasing physically fit men needed for military service. If you haven't inaugurated the program recommended recently by "Chemical Industries" of replacing men of draft age with older men and women you must find yourself in a ticklish position right now. It is becoming increasingly difficult to obtain occupational deferments before local draft boards. They have tremendous quotas to fill these days.

There may be one hope for you, though, and we advise you to get in touch with the Manpower Commission if you have a manpower problem. We are speaking of the Manning Table Program which was recently put into effect. This program provides an inventory of worker requirements and a basis for the orderly withdrawal of physically fit men of military age as replacements are available from the balance of the population. It doesn't give permanent deferments to any one: it works on a six-months basis. The program was initially recommended by Selective Service and the War Production Board with the approval of the War Manpower Commission. It is being developed rapidly as a joint effort of the War Manpower Commission and the Selective Service System. It is designed for you. Why not take advantage of it?

CI EDITORIAL

Walter J. Murphy, Editor

Patents and the Public Interest: In recent months a great deal has been said and written about patents. Some think that they are good to have; others think they are evil things. Some think that they should be taxed; and still others that they should be licensed to any and all irrespective of consequences.

Whatever has been said and written recently about this controversy by one side has been considered biased by the other, and the public has been led astray and has been confused.

Recently we had the good fortune of reading the outline of a lecture delivered a few years ago at The Ohio State University by Colonel H. A. Toulmin, Jr. He had spoken about the importance of invention to the Nation and had made what appeared to be some sound and intelligent observations about patents and the public interest.

Believing these observations might help clarify the atmosphere surrounding this controversy about patents, we have arranged to present to our readers a condensed version of Colonel Toulmin's lecture. It will be found on page 696 of this issue, and we believe it will prove enlightening and interesting.

The Colleges and the Draft: Citizens of this country in a hundred different ways are now beginning to feel and appreciate what total all-out war really means. When it becomes absolutely necessary to extend the draft to the eighteen year-old youngsters then we can be certain of but one thing and that is that the United States is in the most critical period in its history. In taking these youngsters, particularly those who have outstanding ability, we are heavily mortgaging the future. Winston Churchill's description of all-out war (blood, sweat and tears) is an understatement when we begin to draft those who are in their formative years and are preparing themselves in our schools and universities so that they may become the leaders of tomorrow.

Senator Robert A. Taft's suggestion that the Manpower Bill be amended so that the President may be empowered to select not over 25,000 individuals from each age group in the "teen-age" draft to complete their education for essential army, navy and civilian war purposes is an excellent one and one that merits active support. There is just one criticism and that is that unquestionably the number 25,000 is too low and should be raised to at least double that amount.

It is now very evident that we face a serious shortage of highly trained technical personnel now and that this condition will become more acute in the next two years. The proposal of Senator Taft will help to solve this problem in its immediate relation to the war program and will provide at least a minimum of young technically trained men for the post-war period. It does not, however, solve the problems facing the liberal arts colleges and universities, nor will it keep thousands of bright young men from service with the armed forces, men who normally would be attending such schools. But we are in a total war.

If Senator Taft's suggestion is finally written into the Manpower Act then provision should be made for identifying those men who are selected. They should be put into uniform or given some badge of identification. Such individuals most certainly will not be slackers and they should not be left open to unjust criticism by friends and neighbors. Such men necessarily must maintain high scholastic standing, and provision should be made that poor and rich alike have equal opportunity to serve in this corps. Nearly a year ago Professor Harold S. Booth of Western Reserve urged the creation of such a group and his suggested designation (U. S. Professional Training Reserve) is an excellent one we believe.

Guidebook Number Delayed: Circumstances beyond our control have delayed the completion of the 1942-1943 Buyer's Guidebook Number of CHEMICAL INDUSTRIES. The draft, loss of personnel to war industries in the printing plant, combined with a sizeable increase in the number itself have made it necessary to bring the "Guide" out after the November issue instead of after the October number. We trust that the thousands of readers and users of the "Guide" will bear with us in this unavoidable delay. War is all that Sherman said it was some seventy-five or eighty years ago.

Packaging Chemicals in War: The Office of Price Administration has advised the chemical industry that increased costs for containers will not be recognized as grounds for scaling prices higher on chemicals except in a very limited number of cases where unusual hardship can be clearly demonstrated. The purpose in back of this order is to force chemical manufacturers to change from steel containers and others fabricated with highly critical materials to types produced from materials less critical.

This order is going to tax the ingenuity of packaging experts in the chemical field. Even materials generally classified as less critical are by no stretch of the imagination easy to get at the moment and in all probability such materials will also soon become critical. Unquestionably in many instances changes will mean higher packaging costs. Chemical producers will find glass carboys and tight barrels more expensive than the containers they are now using but, according to OPA, this will not constitute a legitimate reason for increasing prices unless profit margins are seriously impaired.

Streamlining Technical Conventions: The army has found it necessary to take over several of the hotels in Indianapolis and as a result the Spring Meeting of the American Chemical Society scheduled to be held in that city has been called off. It is possible that the meeting may be transferred to Detroit and streamlined to the extent of eliminating all of the usual social functions. The meeting of the chemical engineers in Cincinnati this month will be held to two days and the ladies' program has been eliminated.

There are many who hold the opinion that all technical meetings should be abandoned for the duration. The editors of CHEMICAL INDUSTRIES disagree with this view. Now more than ever it is desirable for the technical brains of the country to meet periodically for the verbal exchange of vital information, but dances, receptions and organized entertainment for the "visiting firemen" is a waste of valuable time that should be conserved in a war period. We have always felt that that angle has been overdone in many conventions even during peacetime. Certainly no excuse exists for doing it now.

The Importance of Invention to the Nation

By H. A. Toulmin, Jr., D. J., LL.D., Litt. D.

The American road to success has been a highway down which invention has ridden to make us free. Invention has always been encouraged in America by the government and our patent laws reflect this fact. Now there is a threat to this very patent system and our author, an eminent lawyer, rises in defense of our nation's independent spirit.

WHAT has made this country successful? It could not be government alone, because a government can rise no higher than its source—the people and their business. It could not be war, because we have never been successful warriors in the Continental sense. It could not be climate, because we have all kinds and degrees. It could not be politics, for we could not live successfully by oratory and partisanship alone.

The American road has been a highway down which invention has ridden to make us free. Engineering, chemistry, mechanics and industry have teamed with salesmanship, agriculture and law to conquer the hills of the road and populate the broad valleys of this great country of ours. Everywhere you go to view our progress of the last one hundred and fifty years you will be impressed with the effect of our mechanical turn of mind and our independent individual temperament with our capacity for team work in the common good.

American Accomplishments

What then are the accomplishments of the American scheme?

In manufacturing we have contributed interchangeability of parts, the art of subdivision of labor and the award of highly skilled labor wages to ordinary workmen; the application of automatic machines for quantity production of parts of the finest precision, with the result that we have been able to produce *en masse* machines whose parts are produced by hundreds of workmen who often produce only one part and sometimes perform only one operation on one part.

We have managed this vast production organization with a new type of industrial management known as scientific management. We have sold the products of these factories by such new merchandising creations as direct mail, mass sales organization, chain stores, national advertising and radio broadcasting. We have established new standards of morals in merchandising by truth in advertising. We have distributed our mass of products through new forms of multiple merchandisers, such as the chain store and the department store; and we have expanded and integrated our industrial and financial organizations into great giants and managed and controlled them by the simple device of the holding company. In short, our primary accomplishment has been work for work's sake and not work to produce sufficient income to enjoy other things than work.*

The basis of our prosperity has been our genius for invention and the manufacturing of new devices. From our early beginnings we have founded our prosperity upon manufacturing. To increase employment, create new industries and expand old industry by introducing new products, the United States has adopted a policy of protecting the inventor and of encouraging him.

Invention: The American Patent System

What is an invention?

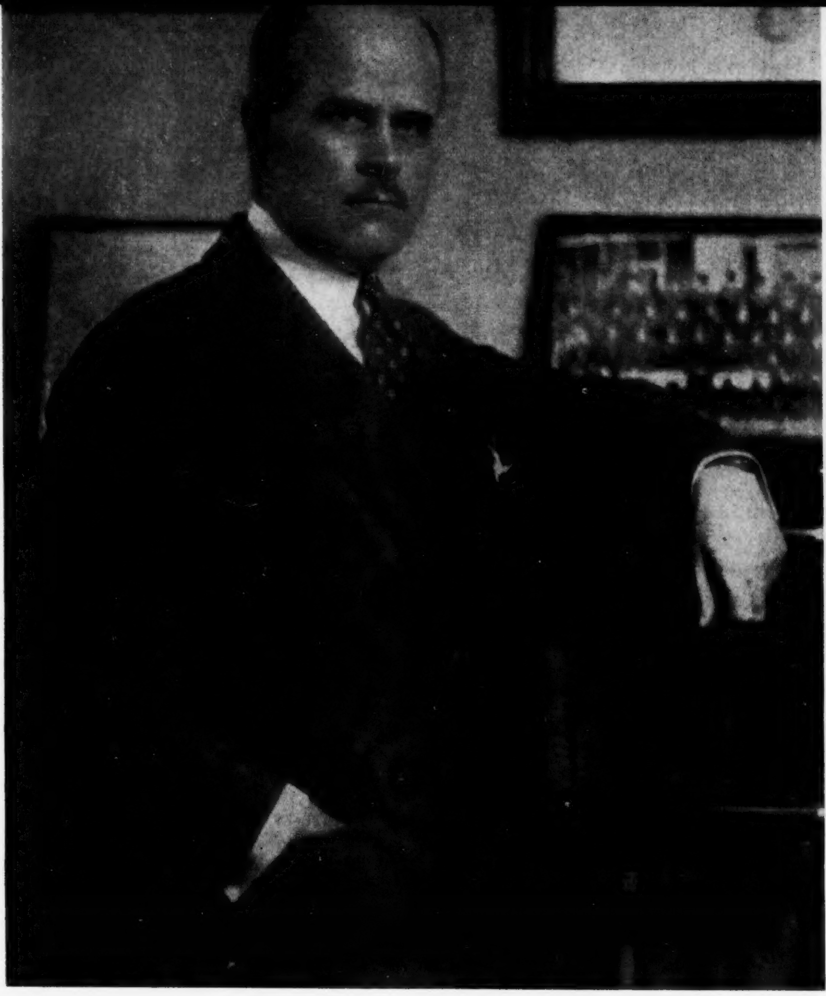
An invention is the intellectual creation of a new product, process, mechanism or design that never existed before. It may be the combination of old parts put together in a new way or it may be the use of an old mechanism to produce a new result. It may be a new combination of steps in the practice of a process or it may be an old process that produces a new result or new product.

The United States system of protection under patents is unique. It is one of the reasons for our great industrial prosperity as compared with prosperity in foreign nations where the patent laws are

* This article is based on a lecture in the Survey of Engineering delivered by Colonel H. A. Toulmin, Jr., of Toulmin & Toulmin, Dayton, Ohio, before the faculty and students of the College of Engineering of The Ohio State University in 1938. Colonel Toulmin's reputation as an Executive, Lawyer, Inventor and Author eminently qualifies him to discuss the subject. *Ed.*

An Open Forum

This article by Col. Toulmin is on a subject very close to the hearts of every one in the chemical industry. The patents question has been one on which there has been much conjecture lately. What will be done and won't be done nobody knows. But Col. Toulmin, an eminent lawyer, has some ideas on the subject and they are worth pondering over. CI takes this opportunity to conduct an open forum on the subject. What are your thoughts on this question? Do you agree or disagree with the author? We'd like to have your reactions and, wherever possible, your opinions. Write today.



an established necessity for successful invention. Goodyear was an impoverished dentist who developed vulcanized rubber on a kitchen stove and Davenport invented the electric motor in a country blacksmith shop.

It is an American characteristic that inventions have been successful in direct proportion to the business ability of the inventors. Most inventive failures are due to the fact that the inventors are so impractical as business men that they do not take advantage of the opportunities permitted under the United States system of commercial development. Their inventions fail because of the lack of business sponsorship that only the inventor can give to the child of his brain.

Economic Importance of Invention

As has been stated, the whole foundation of the prosperity of the United States rests upon manufacturing, and invention and the protection of invention are of the very essence of manufacturing prosperity in the United States. Let us look at some of the great milestones in the industrial history of the United States where the advent of inventions change the entire economic course of our country. There were three great eras of manufacturing prosperity and advancement in the United States, which coincide with the three great eras of our inventions.

not as liberal or as enlightened as in our country.

Here is the scheme on which we based our type of patent laws. We said: "Mr. Inventor, if you will make an invention that is of public benefit and will disclose that invention promptly for the stimulation of industry, the United States government will give you the right to exclude others from manufacturing, using or selling that invention for a period of seventeen years. You will not have to pay any taxes in connection with that invention because we are going to rely upon the good sense of the people of the United States to help you put your invention into practice if it is any good. The resulting increase in business will be worth more than all the taxes that we can get."

In European countries invention has been throttled by patent laws that require the inventor to go forward and manufacture under his patent or lose it; or the inventor is taxed with heavy annual fees for the privilege of keeping his patent alive. This short-sighted policy has put so many barriers in the path of inventors and manufacturers that the United States has become, by contrast, the premier industrial nation of the world because its inventors are protected and rewarded in their initiative. A study of the number of patents taken out in the United States and in foreign countries shows that the number of these patents is about in direct proportion to the industrial success of the respective nations. This is the practical proof of the wisdom of our policy.

As a consequence of these free opportunities for protection of them, invention has been practiced by practically every sort of person. Abraham Lincoln was an inventor of the "water camel," a device for lifting boats over sand bars in the Middle Western rivers. Thomas Jefferson was the inventor of a plow, as was likewise Washington an inventor. Mark Twain was the inventor of a scrap book that is used to this day. Morse, who invented the telegraph, was a portrait painter; Bell of telephone fame was a poor doctor and teacher of deaf mutes; and Edison started out as a newsboy vendor of magazines on a railroad train and afterwards earned his living as a journeyman telegraph operator.

The inventor of the power loom was a clergyman; the inventor of the cotton gin was a tutor on a southern plantation; the founder of cotton manufacturing was a barber, and Franklin was a philosopher and business man. Indeed, history records the fact that in the United States the largest proportion of the great inventions have been the products of the skill of individuals who have not had the benefit of the mass power and wealth of great corporations.

Inventive ability does not first flow from a corporation's pocketbook and, while certain types of research engineering must be practiced in large corporation laboratories, and it frequently is, it is not

The first period was from 1780 to 1830; the second period from 1830 to 1880; the third period was from 1880 to 1930. The first period was the conversion from individual artisanship at home to manufacturing by factories. The second period was the integration of factories into intra-state establishments composed of groups of separate factories, such as foundries, machine shops, forge shops and the like. The third period was one of factory organization in which engineering principles were applied to management, to financing and to corporate organization.

From 1780 to 1830 industry was learning to walk; from 1830 to 1880 it was learning to run; and from 1880 to 1930 industries were learning to pull the industrial vehicles as a team, for this last period was the era of team work, coordination, organization and of corporate combination.

Thus the United States has gone through the gestative period of forming factories; then creating a system of factories; and lastly, the integrating of whole systems of factories, geographically widely scattered, but operated as a cohesive whole.

During the period from 1780 to 1830 there appeared the inventions in the cotton gin, in interchangeable parts manufacturing, in steamboats, in railways, in the use of machine tools for performing a single operation; in the second period of 1830 to 1880 there came the great in-

ventions of the telegraph, the telephone, of typewriters, the air brake, etc.; in the third period came the introduction of Taylor's scientific management, the automobile, mass merchandising in department stores by John Wanamaker, direct mail selling and sales conventions, the cash register, and the invention of the airplane by the Wrights.

Let us look at some of these inventions which have made a great impression upon our country's history.

From 1780 to 1830, John Fitch, Stevens, Livingston, Fulton and Roosevelt developed the steamboat on the Delaware, the Hudson river, the Ohio and the Mississippi, and thus introduced the age of steam and water borne transportation. The success of their efforts is proven by the fact that by 1834 the steam tonnage on the rivers of the United States was fifty per cent of that in the British Empire. Fulton startled the world with his "Clermont" which traveled in 1807 from Albany to New York—150 miles—in 32 hours. Prior to that Fitch had navigated the Delaware and carried three thousand people on his steamboat in a single summer. Stevens contributed high pressure boilers, screw propellers and non-condensing low pressure engines.

On land Eli Whitney invented the cotton gin which spelt the birth of the cotton industry and revolutionized the agricultural world. Then he invented interchangeable manufacturing when making muskets for the government in 1813. He was followed by North, Brown, Sharpe, Robbins, Lawrence and Pratt, who established the machine tool industry.

In the era of 1830 to 1880 came rail transportation, the Pullman car and the revolution caused by Westinghouse's air brake in 1869. This 22-year old inventor made it possible to have high speed mass railroad transportation, and in five years his invention was placed in use on more than two thousand locomotives and seven thousand cars. During this period McCormick gave the world the reaper to mechanize agriculture. Morse invented the telegraph to give speed to business. Thousands of organizations, encouraged by mass rail transportation and the merchandising efforts of such men as Wanamaker, sprung up everywhere. The early efforts of Davenport in inventing the electric motor matured into the creation of the electric industry by Edison, Westinghouse and Sprague, giving to industry and commerce cheap electric power and the electric light.

From 1880 to 1930 came the automobile of Duryea and Selden; the telephone of Bell, Berliner and Edison; business machines such as the typewriter of Sholes and Edison and the Patterson cash register invented by Ritty. Then came radio based upon the activities of Marconi, the DeForest vacuum tube amplifier and long distance telephones made possible by Pupin's loading coil. The Wrights created the airplane. In 1910 Acheson gave us carborundum and in 1911 Hall gave us aluminum. All these are but a few of our contributions.

It cost Columbus $2,115.00 to discover America. Four hundred fifty years later Americans had made the investment worth well over four hundred billion dollars.

The Economics of Invention

What has been the economic result of these great inventions?

In the fifty-year period from 1873 to 1923, which contains average periods of prosperity and depression and therefore gives a fair comparison, our population increased 158 per cent, our total wealth increased 753 per cent, and our *per capita* wealth rose from $830.00 to $2,689.00 per person, or 223 per cent.

Our bank deposits grew 1758 per cent and the value of our manufactured goods grew 1366 per cent as compared with the growth in agriculture of 336 per cent. This shows our marked trend towards industrialization and capital wealth.

Theodore Roosevelt said in describing this nation in a succinct summary of our national spirit:

"Self-restraint, self-mastery, common sense, the power of accepting individual responsibility and yet of acting in conjunction with others, courage and resolution—these are the qualities which mark a masterful people."

Some of the things that have characterized our success are these:

(a) The growth of our country in the terms of manufacturing and merchandising on a grand scale.

(b) The effect on prosperity of invention and research.

(c) The American method of reducing theoretical ideas to a profitable manufacturing basis.

Results of Invention

Let us look at our results.

The amount of living obtained per person was substantially the same from the dawn of history until about 1800. With the imposition of the American method of living the average citizen of the United States consumes 75 times what he did in 1800 and about 66 per cent of this increase has occurred since 1900 or in a single generation.

The United States has about six per cent of the world's population. It uses more than one-half of the world's industrial machinery. We install about $23.00 worth of machinery per capita each year, while Great Britain installs $10.00 worth of machinery; Germany less than $9.00; India, 17 cents, and China, 5 cents per capita.

This country uses as much electrical energy as all of the rest of the world combined due to the expansion of the use of power driven machinery and power labor saving devices. The productivity of the average American laborer increased 53 per cent during a recent period of 10 years. That is why in the machine industries the American workman has a productivity capacity about 3.5 times greater than that of the workman in England and Germany. The world has discovered that one of the causes of our prosperity is from this source of machinery with the result that out of the total of $5,500,000,000.00 worth of industrial machinery normally produced annually in the world, the United States produces nearly 60 per cent and our export of such machinery comprises about 35 per cent of the world total.

The result on national and world trade is significant as pointed out by the Department of Commerce, which says:

"On the social side, this industrial expansion operates in two ways. It tends to raise the standard of living—that is to say, real wages. It also makes available commodities not previously obtainable. In countless ways this expanding industrial development is making it possible for humanity not only to live on a better material level but to enjoy better sanitation, better health, better education, and all else that this implies."

Public Policy Behind Patents

The subject of invention and patents to establish the rights to inventions has always been a controversial one. Politically, the right to intellectual creations and new developments has been at the very heart of the movements that have led to the growth of the American nation. In dealing with research and invention, we are dealing with the very warp and woof of the fabric of American life. No man needs demonstration that our civilization has been, in a progressively increasing degree, founded upon the industrial activities of the American people. It is likewise equally axiomatic that all of our great industries have, at one time or another, or continuously, been founded upon patents. The same thing has been true of the other great industrial nations of the earth. Indeed, the prosperity of most of the nations of the earth has been reflected by the number of patents taken out by their citizens, as a sort of barometer of international success.

The American Revolution had its fundamental and basic cause in inventions, new developments, processes and machines. It was the fight to preserve the rights to such things that made the American Revolution. England had a colonial policy which required that the Colonies be solely the source of raw material, or semifabricated materials, for the use of the mother country, whose manufacturers could fabricate such materials and resell them at a profit to the Colonies, and other countries of the world.

There were statutory provisions enacted by the British Parliament against the importation of improved machinery and inventions into the Colonies. America was to be kept industrially and intellectually sterile. The bootlegging of inventions and machinery to and from England became a business.

England and Colonial Invention

It was not without cause that Sir Joshua Child, President of the East India Company, complained that "New England is the most prejudicial plantation to this kingdom," for it was in New England that the growing manufacturing of America was making itself most felt. From the time of Queen Elizabeth, Great Britain had been systematically fostering industry by granting patents, monopolies and special privileges to those who introduced them. England had attracted consequently large numbers of skilled artisans from Europe, who found employment in her industries to make her the leading industrial nation of the world.

Now across the ocean, England found that she must take legislative steps to curb the industrial life that was growing in the American Colonies, which threatened her manufacturing industries, because America was both the source of supplies for raw materials for England's factories and the market for her manufactured goods.

There was a further threat in that, if American manufacturing continued, it would turn out goods superior to the British, putting her in a secondary place of a vassal manufacturing state. This situation was particularly critical because it must be remembered that the great inventions which brought England into her industrial leadership were being successfully applied in her plants for the first time at about the time of the American Revolution. It was in the last quarter of the seventeen hundreds that Arkwright and Watt got their patents and revolutionized British manufacturing.

Accelerated Tempo

With this accelerated tempo of industry in England, Britain's policy was to use the imported timber, iron and glass and the other raw and semifabricated materials for her factories to work upon, and by the prosperity created in America through such purchases, to form in turn a market for the manufactured products of England. England's weakness was the dependence of her manufacturers upon imported materials from countries she did not control, so that the regulation of her colonies seemed the answer to her manufacturers' prayers.

She saw competing manufacturing rising in Holland and France where her monopoly by British goods was disappearing, for white cloth exports had fallen from 100,000 to 11,000 pieces. Again she saw wool being displaced by East India cotton being imported into the Colonies, which thus developed a weaving industry by establishing cotton mills in New England which gave a dual offense to English manufacturers: first because it reduced their manufacturing of woolen goods, and second because the Colonies had a lighter and cheaper textile material which England could not afford.

So British laws either directly restricted or prohibited certain industries in the Colonies, or discouraged other industries in competing with those of England from which England could make a profit. The first of these laws was enacted in 1699 and they continued to be enacted in increasing numbers until the American Revolution.

When Washington delivered his inaugural address, it was primarily devoted to the encouragement of invention and manufacturing. He was speaking under a constitution whose provision as to patents was proposed and enacted at the convention at Philadelphia without debate and without objection, so apparent was it that it was necessary to the new Union. I believe it was one of the few provisions, if not the only one, that was so enacted by unanimous consent of all political interests. The first act of Alexander Hamilton, as Secretary of the Treasury, was the production of his famous report on the encouragement of manufacturing.

Economic Justification

What is the economic justification of a patent? This document that gives a governmental grant of a monopoly on an invention for seventeen years is a reward for the disclosure to the public of an invention that would otherwise not exist. It takes nothing from the public, because the invention had no existence; it merely rewards the inventor for giving the public something it would not otherwise have had. More important still, it protects the owner of the invention, so that he is justified in establishing a business and making an investment to produce and sell the invention. This benefits the public by a creation of a new business, giving employment and giving the advantage of the use of the new idea sold in the apparatus containing the invention. When the patent expires, the public has the free and unrestricted use of it. There is a great storehouse of inventive ideas and disclosures in expired patents, which are of daily use to the public and to industry.

Early in our national history, the Supreme Court of the United States said:

"It is undeniably true, that the limited and temporary monopoly granted to inventors was never designed for their exclusive profit or advantage; the benefit to the public or community at large was another and doubtless the primary object in granting and securing that monopoly."

Patents are of interest because they provide the means of the establishment of claims to scientific achievement. They present the opportunity to use them for the furtherance of research and to throw those results open to the public through patents, by preventing others from securing patents on the same subject for exclusive commercial gain. They are useful for rewarding younger research workers, and useful for financing further research. They are particularly useful in the control of inventions for the public benefit, so that they can only be produced by responsible manufacturers.

Patents define the accomplishments of the great intellectual explorers, for the unknown regions of science remain the beckoning uncharted territories for present day exploration, compared to which past geographical exploration is but a pygmy in adventure.

Patent Rewards

In this ambitious and acquisitive nation reputation, fame, and monetary reward are moving causes for our devotion to business. The monopolistic reward of a patent makes it possible to put the government stamp of ambition, reputation and of fame on the first inventor. That satisfies our desire for reputation. Secondly, the patent, by giving a monopoly, satisfies our ambition for power to control and raises the individual to the same dignity in his special sphere, to the limits of his patent, as the government itself. In fact, the monopoly of a patent is the solemn delegation to an individual of the right of the government to dominate and control industry. Thirdly, the patent satisfies our acquisitive nature because it enables us to secure a monetary reward, many times of very large value, for the exercise of our ability and energy and as a reward for our courage and investment in research and development.

This nation has grown successful and powerful by recognizing this trait of human nature: that no sacrifice is too great if the potential reward is commensurate with the sacrifice. A departure from that policy will throttle the independent spirit of the inventor and the business man.

For more than 150 years America has progressed because of the fruits of the inventive minds of our mechanics, chemists, electricians, engineers. This is the true source of the better things of life, created legitimately and made available by courageous, far-sighted capital, and it has served to raise our standard of living and of wages to the highest of any country in the world.

What political party or clique with its noisy nostrums has demonstrated equally tangible results for the common man?

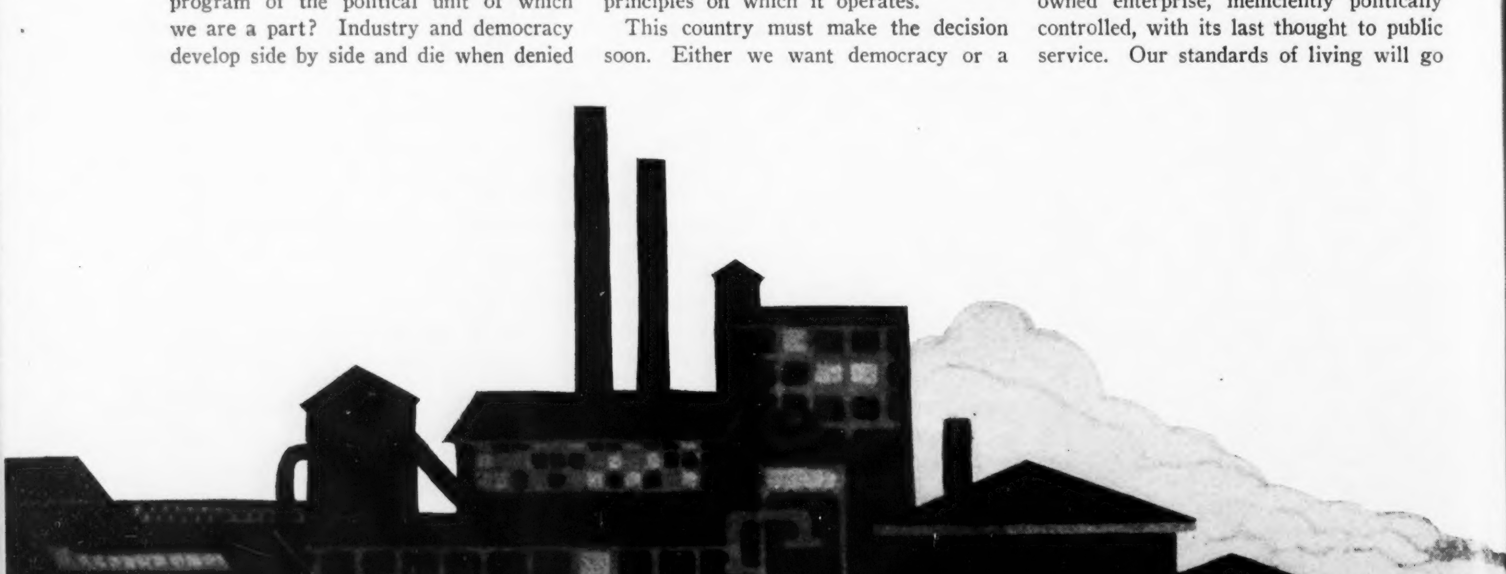
Industrial Planning II

Walter S. Landis, V. P.
American Cyanamid Co.

This is Author Landis's second article on industrial planning. It contains a great deal of information on the post-war structure and the program of the political unit of which we are a part. Just what forms they will take are matters of opinion. Walter Landis says we must choose now. On our choice depends our future.

THE important fundamental to industrial planning is a comprehensive knowledge of the environment. We can plan effectively to no greater degree than we know our environment. What will be the post-war structure and program of the political unit of which we are a part? Industry and democracy develop side by side and die when denied the freedoms which are inherent in any democratic form of government. Argument is unnecessary; one has to look only to the pages of history to find a multitude of examples. Remember it is not the name it goes under, but rather the principles on which it operates.

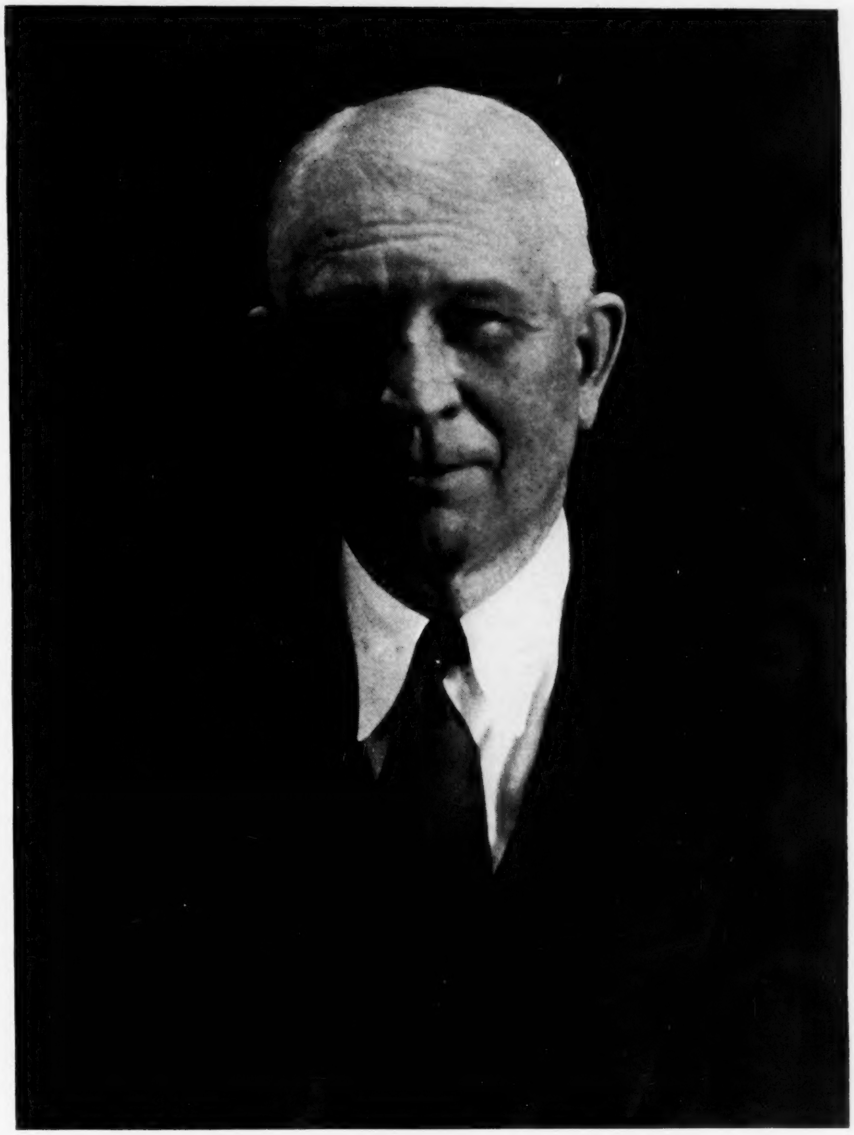
This country must make the decision soon. Either we want democracy or a socialized state. With democracy we can expect continued development of our private industrial system, continuing to give us the highest standard of living in the world, with all its comforts and conveniences; or we will have state owned enterprise, inefficiently politically controlled, with its last thought to public service. Our standards of living will go



down, approaching the inconceivably low. There are plenty of examples existing today in many parts of the world of what happens where private industry has had no opportunity to develop because of the lack of the democratic principles so necessary to its existence.

War destroys goods at a much faster rate than normal consumption. For example our steel production is vastly greater than it has been for many years past, yet we have barely enough to carry on our war activities after cutting to the bone the supply to the producer of normal consumption goods. We are thus building up a great unfilled demand for this foundation metal of our civilization. The same is true of copper in fact of practically all the metals. It has spread over into many other lines of production. We in this country are much better off even than many of the countries of the world and these shortages in foreign countries must not be overlooked. It is safe to assume that at the close of the war there will be a world wide shortage of all types of consumer goods, the shortage being of a degree heretofore experienced to anything like the magnitude, within this Age of Industry.

We must approximate the character of this shortage. It will be serious in the case of light consumers goods. People will demand new wardrobes, largely because they have become tired of the monotony of style and color of the old. Light household equipment will be called for in great quantity, largely because it has not long life, and secondly styling again will play a part. It is almost needless to mention that the more durable goods like automobiles, household refrigerators, vacuum cleaners, radios, agricultural machinery, will offer a tremendous market, first because we have established a reservoir of demand through wear and tear and secondly, as will be developed later, there will be spending money looking for outlets, particularly in this field.



Photograph by Maximilian Toch

In the case of heavy durable goods our problem is not quite so simple. It seems doubtful if we will be short of factory space and, therefore, industrial building may not match up with some of the other demands. The prospect of the railroads is not determinable at this time. As a matter of war program railroads and shipping should have top priorities over and above all else. The shipping is being taken care of but for some quite unexplainable reason the maintenance and equipment of our railroads is far from what it should be. If our Governmental commissions and administrative units once understand this situation, then the railroads should not face the problem of deferred maintenance in quite so serious a degree. The answer to this is not clear at the present time. The railroads on the other hand will be in much better financial shape than in recent years. They will be in a position to do some modernization. This problem must be followed closely, for developments in the not distant future will determine their post-war condition.

Private housing plays a large part in some post-war planning. Our social economist figures an enormous demand for housing upon the basis of some calculated theoretical requirements. But this situation is not at all simple to appraise. There may be much less housing than some of the forecasts consider as a minimum necessity, largely because many public housing schemes have been so conceived that they actually deter private investment in this field. Theoretically there should be ample private funds available for housing development. Practically these may be diverted to other outlets. No one denies the fact that housing standards taken over the country as a whole afford ample room for improvement, but competition from state subsidized housing can easily restrict private investment in this field. Then again there are going to be many ghost towns left in this country as a result of the program of allocation of materials during the war emergency, and this may deter investment in housing until these towns have found some method of rehabilitation.

There is no question but that there have been many ingenious developments in the housing field and that pressure will come from various quarters to try them out. At the same time if we do not win our full democracy it is quite certain that housing projects will be in the first line of attack by the socialized state and this type of construction presents a highly specialized market for the products of industry. This is a development that must be watched closely and post-war planning in this field must be developed broadly and flexibly to meet the situation in the post-war period. There is a wide difference in the materials consumed in a public housing program and in that of

the unrestricted individual. It is not inconceivable that costs of building, due to the several factors with which we are all familiar, may be so excessive in the immediate post-war period that it would be poor economics to invest at that particular price level.

Maintenance of existing property is far below a proper standard. Roofing, plumbing, painting will call for much material. Alterations, modernization, additional conveniences, will make a large total. These items may be more important than new construction if prices remain relatively high.

Customers Must Spend

Business is dependent upon the ability and the will to spend on the part of its customers. How much ready cash these customers will have to meet these deficiencies can be estimated only approximately at this time. The cash money now in circulation has doubled within a relatively short time. It is a reasonable prediction that it may double again within the not too distant future. As an approximate figure, there may be somewhere between 15 and 20 billions of dollars more of this circulating money than has been customary in this country. The installment bond purchases may possibly approach 40 billion dollars, and this may be looked upon as practically the equivalent of cash spending money.

Debts are being paid off at a high rate and in consequence new credits will be available to the extent of many billions of dollars for installment buying, this also to be considered as another equivalent for cash spending money.

We, therefore, are probably not exaggerating very much in assuming that at the close of the war there may be as much as 75 billion dollars of this type of money ready and willing to go into the market to cover these deficiencies mentioned above. This kind of money will go largely for clothing, replacement of household equipment, automobiles, furniture, refrigerators, radio sets, agricultural equipment, etc., in lesser volume to repairs and alterations.

In addition to the above, all our industrial property will have accumulated a deficiency in maintenance, and a vast amount of labor and supplies will be called for to restore it to fair operating condition, plus conversion to peace-time production. This, however, does not come out of the spending money mentioned above, and with the tax structure on its present petty political basis, its source is a real problem.

The legislation so far proposed to stop inflation will fall far short of that goal. Politically it seems doubtful if any legislation or administrative decrees can pass the petty partisan test to make them very effective. Therefore, it seems that about the best one can expect is that there will be some limited control of inflation which may tend to slow up its effect, particularly in a general price rise; it may divert the direction it takes. While taxes seem to offer a sound method of inflation control, this is not so effective as many suppose, since they circulate so rapidly, taking funds that would have little inflationary effect, and distributing them to quarters where they will exert the greatest inflationary influence. The same final result follows the schemes of compulsory saving that have been proposed so far. It is to be assumed that a much higher price level will exist at the conclusion of the war, one not necessarily equalized over all commodities and services, and due to purely inflationary causes.

Assuming for purposes of argument that there is this 75 billion dollar fund, the question arises on the part of the producer as to how much goods this is likely to purchase. Factories are operated in terms of units of production, and one must differentiate between such units and their dollar value. It is very interesting to study the effect of war upon national economy. Since the foundation of the United States under its Constitution, we have passed through two minor and two major wars. The war of 1812 and the Mexican war of 1849, as the minor units; the Civil war of 1860 and the World war of 1917, as the major units. The Spanish-American war need not be considered here as of measurable influence.

Two Stand Out

Two facts stand out prominently in review of these examples. There followed a marked increase in prices, not alike for all classes of goods, and a marked increase in government expenditures. Prices rose excessively during the period of actual strife, fluctuated to some extent in the immediate post-war period, and again resumed an upward trend. This is not because goods were worth intrinsically more, but their cost of production was higher due to the necessity of permitting a rise in prices as a form of currency devaluation necessary to take care of the exaggerated debts created during the war. Government expenditures following the war were also at a much higher level, in part due to the burden of debt and in part due to greater experimentation in the social field, in attempting to alleviate the damage which the national economy suffers during the war. We can be certain that the same influences are now working to produce the same character of change.

As a measure of what is in store for our economy, my opinion is that governmental post-war expenditures will be double at least, can easily reach three times that of the pre-war period, and in spite of the fact that this latter was influenced by a crazy spending policy. This means continued high taxes, and such as will burden disproportionately the corporation and the thrifty middle and upper strata of our population Their purchasing power will be seriously influenced by this unbalanced system of taxation. Over-all costs of production will be influenced by this tax burden on corporations.

Then in addition are the exertions of our socially minded "economists" in high places, and the disturbing activity of the pressure groups, tending to dis-equilibrium. All this points to a high post-war price level, two to four times that of pre-war.

High Post-War Income

The national income in the post-war years is a subject of much speculation. Figures run high, as much as two hundred billion dollars, and glowing comparisons are made with the pre-war figures. No one emphasizes that this is a comparison of two different kinds of dollars, and in terms of purchasing power it may mean actually a serious decline. A vast portion of our population will not share in the larger figures, in proportion to the increase; the beneficiary of the trust fund, and the insurance policy; the millions of civil employees, police, fire, teachers, civil administrative officials, the employees of the benevolent and charitable institutions, the old age pensioners, and the like. The golden eggs have all been laid and collected, and the geese now are up for sacrifice. In our planning we must recognize that a vast portion of our customers cannot come into the market for their customary supplies. Even the middle and upper classes will have been driven to a much lower standard of living, and their purchasing habits will be changed greatly.

To industry two immediate problems are presented here, the buying power of the vast stock of spending money, and that of the future annual income. They may call for very different planning. The intrinsic value of the spending money must shrink with time elapsed, until it can go to market. The same people talk of the greatly increased national income in the future, and then talk of stabilization to stop inflation. This is a good sample of their confused state of mind. The only way to finance the war effort is to insure a rising national income, that is permit a rise in prices. There is no alternative. Of course, there will be some serious squeezes before this is understood in high places, and industry must be ever on the alert, particularly the producers of the more prime necessities.

All these influences point to the conclusion, that a goodly fraction of our pop-

ulation numerically will have some vast sum of spending money, continually shrinking in purchasing power as time elapses, another smaller though very important group from the buying angle, will suffer shrinkage sufficient to change their buying habits to a material degree, and finally another large fraction will be far worse off than before the war; these two last named groups will be able only slowly to re-establish their pre-war status. One cannot think of the equivalent of spending money in terms of pre-war levels. It will buy much less of the same quality goods. One cannot think of the volume of sales to the two last named classes of population in terms of pre-war per capita or any other such ratio.

To industry this means planning new lines of production, intrinsically cheaper goods often at the sacrifice of quality. It means new raw materials, for the older will be at too high a price level, new designs to cut corners, new methods of production to cut costs further. Any attempt to maintain the pre-war quality standards under the post-war price level will mean a heavy cut in volume, after the first flush period is over, and reduced volume does not create employment nor develop industry. The skill and intelligence applied to this problem will determine largely the future of American industry.

Reduce Specifically

With the broad principles set forth in general terms, it is in order to reduce them to the specific planning problem. But no broad general and universally applicable program can be laid for all industry. Each industrial unit should appraise the probable distribution of the reservoir of spending money, to the best of its ability, and the probable distribution of the post-war income over a reasonably short period. A large share of the accumulated spending money will go into the items listed in the fourth paragraph. The program of planning to take care of this temporary situation would involve each specific division of industry supplying the goods listed, making an estimate of the probable portion that will be diverted to their class of goods. Each unit of the specific division or each supplier of raw materials and semi-manufactured goods to the division, should then determine what portion of these needs he might logically supply and plan his production lines accordingly. In this the divisions of industry should cooperate to the extent that the totals at which they have arrived do not add to too many times one hundred per cent. In other words there should be cooperative effort in making these broad estimates of allocation of this spending money so that the same dollar is not figured in too often. The same rule applies to the individual units of a particular division. Here is a place for the great national organizations to act as clearing houses in merely establishing totals that are reasonable. The sub-division should be left to the several industrial groups. This is a public duty concerned only with the assembly of totals that will stand the test of reasonable probability.

A similar treatment of the probable future national income is in order. The same groups, and in the same manner should be charged with the problem of making reasonable estimates of this income and of its probable allocation to the various needs and services of the public and under the conditions that may be presumed to exist at the end of the war. In the handling of this problem industry will prove whether or not it deserves a place in the future economy. The degree to which these national associations can educate their members to concerted and cooperative effort in this preliminary assembling of figures, indicates whether they have a real place in our American system or whether they have fallen into the ways of bureaucracy with offices filled with chair-warmers.

Every industrial unit must then appraise its position in this general picture. It will be its problem to determine whether or not it has the necessary new designs ready, the space, tools and staff to meet its problems, and can fulfill its obligation to our industrial system. A major re-organization of the units, production and distribution may be in order. Geography may play an important part here. A study made by the individual unit must be broad enough to understand the new economic conditions and industrial developments for obsolescence may have washed out many of the older items of production and radically new replacements involving newer substitutes may be in order.

Foreign markets are just as bare as domestic. While export may be a temporary solution, war brings about expansion of manufacturing into countries, that are unwilling to have their national economy disturbed at intervals by such catastrophe as a world war. It is a proper time to look into foreign expansion, and be ready to proceed for someone will do it, because countries will protect themselves. This may be a possible solution of the problem of excess equipment, for it may serve well in a foreign branch.

This planning is a subject of great complexity when dealt with in the abstract. In any specific industry it is not too complicated to be undertaken by those acquainted with the field. It must be done in self preservation, for if we are not ready to take back our men who have gone into the army, and to keep our people employed, then we can expect the State will use its entire resources and power to take us over. And that will be the end of our democracy—we will have lost the war even if we won all the battles. No help will be afforded by the socially minded, it is a task for industry alone. It can be aided greatly by cooperation in setting up the goals and standards, upon which the individual unit bases its program. It is a challenge to the business or trade association to collect and edit the basic data. A little planning in these quarters may not be out-of-school.

Read Satevepost

A vast number of planning units has come into the field. Many of them are so organized that preservation of the democratic principle is no part of their object. Others are undecided as to what they are planning for. It must be emphasized that only industry can plan for its rightful future, and only when it has a full understanding of the terrain. Every industrialist should read the editorial in the *Saturday Evening Post* of October 10, 1942, and then start his planning.

This problem of industrial planning for post-war recovery is a complex one. It is not an impossible one. It should be undertaken by industry as a cooperative measure as far as the organization and machinery of collecting all the fundamental data is concerned. Such an organization should be provided not only with competent statistical staff but one that is guided by sound economic advice. In addition it should be able to call upon legal advice to keep its activities within proper limits for we do have certain intangible prescriptions handed us as to what we cannot do in collecting trade information. We should have available experts in distribution, people who understand not only the psychology of public demand but beyond that the ability to guide and direct such desires. The final court of review should be experienced and successful business men. Particularly those who have faced this problem with a broad background of experience. These are men who have directed the horizontal type of industrial development for they possess a possibly broader experience than others who have solved the problems of vertical employment. After all this preliminary work is of so general a nature that judgment will play a larger part than the slide-rule. This latter comes in when the first division of our problem is solved and it is turned over to the producing unit. It is not an insoluble problem and one must not become discouraged on first consideration.

BETWEEN THE LINES

These days, you can't learn too much about containers because of the conditions which change from hour to hour. Substitutes, you can be sure, will get more and more publicity—of that you may be certain. Here's a special inside report on this situation.

MORE and more will be heard of substitute containers in the coming year. It is no longer a question of turning in a tube for each purchase of a filled tube—turning in a used container for a new one; the problem now is that tin, steel, and other critical materials will become increasingly hard to divert into anything but the most vital war uses.

Recognition of this fact is seen in the efforts of the containers industry to assist the Government in finding satisfactory substitutes for these materials in providing an adequate supply of efficient containers of all purposes. These committees are working with the Containers Branch of WPB, but recently Washington let it be known that the industries most dependent on containers using critical materials should not wait for the Government to have been invited to submit their problems to the Branch, which in turn will solve the problem. However, packers refer them to the proper industry committee.

Something of the widespread nature of the whole matter is indicated by even a partial list of present day container demands. Without going into this list, figures reveal that steel barrel and pail industries are producing twice as many containers this year as in normal years, with about ¾ of the total output now going directly into war use, and the remaining 25 per cent indirectly, into such effort.

Steel containers are needed, in this connection, for oil and grease used by armored forces and air services, and scarcely less closely connected with the war, for paints, petroleum products, fuels, etc.; although tight cooperage is coming into increasing play here.

For holding less volatile materials, feeds, fertilizers, and such, the shortage of burlap has led to a growing use of paper, or osnaburg, or paper cans with metal ends. Folding and set-up boxes are even replacing cans to some extent. An encouraging factor in respect to container substitutes is that the containers industry is highly specialized—hence there has been a relatively small conversion to other war production, except stamping machinery. For the most part, conversion has meant a transportation to production of new types of containers rather than new items of output.

Some index to what may be in store ultimately, is furnished by activities of various research organizations and companies making recognized products which have also gone into the containers problem. One such concern* claims to have a new and hitherto not greatly publicized formula, for utilizing surplus farm and range products in turning out all-fibre, plastic-lined containers. These would be used primarily for oil products.

Many Ingredients

Ingredients, it is stated, include corn, various other grains, flaxseed, tallow, animal tissues, bones, and earth clays. The inventor states that three different chemical compounds, each impervious to oil, can be obtained by direct processing of such ingredients. These compounds are applied to fibre containers which it is claimed, are superior for some uses to tin. Enthusiasts even claim that wide adoption of such containers will follow the war and permanently replace some of the tin and other metal containers now used.

The three compounds referred to, include one used as a cement for sides, tops and bottoms of the fibre container; the second is merely an adhesive for aplication of labels, but a third provides what is termed a plastic lining.

Some of the trials this type of container are reported to have withstood include bursting and heat tests, dropping from heights, pressure, etc. Because of the anticipated consumption of surplus farm products, the process has attracted attention of farm-belt members of Congress.

A successful type of substitute container it is acknowledged, would save metal, and perhaps provide new industrial outlets not now on the horizon. Paper "cans" are already accepted for some products formerly requiring tin containers, and railroads have a classification for certain substitute containers replacing scarce metal forms. Certain heavy cartons are replacing metal for overseas shipments, even.

As instances of what substitutes are now being used for, a shell container which is said to satisfactorily protect the projectile, has been developed by fibre can manufacturers. Powder is still packed in metal, however. Some other products still rate metal containers. Lacquer, oil and varnish-type paints may be packed in new or used drums in the hands of packers as of September 14, for instance. Certain chemicals and explosives require drums, even distinctively marked containers.

Meanwhile, the Containers Branch has become definitely interested in the possibilities offered by the synthetic coating process described above. It is experimenting to determine how many products, including many chemicals, can be packed in containers using this method. The belief prevails that the same combination-metal-substitute body, such as fibreboard or plywood, coated inside to hold the product, can be utilized for a wide variety of materials. One effort now being made seeks to determine what chemicals can be adapted to cardboard containers, assuming the synthetic coating under consideration proves adequate. Other inquiries are directed to learning what types of cartons, if treated with this coating would be improved. Some cartons already are sift-proof, and vermin proof, requiring only to be made impervious to moisture to be readily adaptable to present needs. As pressure on metal containers grows acute in the coming year at any rate, authorities look for increasing use of plywood containers, with the above or some similar coating, or even fibre-board drums.

Above Most Promising

At present the above-described coating is regarded as the most promising under consideration, and efforts are now being made to determine how much of the coating can be made available. In this connection plans are under way to bring together the research facilities and those necessary to transpose research into commercial output.

Companies specializing in coatings and treatments are being urged to make their products known at the Containers Branch, where the information will be transmitted to the trades using such types of coatings, or which will soon be in need of these as a substitute for older processes no longer available. Conversely, producers are being invited to make their packaging requirements known in detail at the Branch, with a view to enabling combined efforts to produce a suitable war-time container.

The Branch has a number of successful adaptations to show for its efforts, combined with those of industry; substitution of first, a different material for metal container-bodies, then elimination at a later stage, of metal tops, using plastic or treated cardboard, fibre-board, or other material, which it claims is being used successfully.

* The so-called McMillan process, on which Albert A. Robbins conducted research.

Development of Substitutes Urged

Acting on its warning that critical materials for manufacture of containers will continue to become scarcer, the Containers Branch of WPB is pushing its appeal to the containers industry to develop substitutes. At the same time, it has warned that while many substitutes have been developed and are in use, the fact that no substitute may have been found for a particular requirement does not mean that containers made of critical materials will continue to be available for such purposes. Furthermore, the warning has stressed, substitutes contemplated should be designed to use a minimum of raw materials even though the latter may not now be in the critical category.

The proportion of containers being made of critical metals or other supplies is still excessive, it is stated. Conforming to the situation, the Office of Price Administration has taken several actions to encourage more use of substitutes by industries packaging chemicals. The chemical field particularly, has been advised recently that except in unusual or special cases, upward adjustment of ceiling prices to permit producers to pass on to purchasers increases in container costs is no longer allowable.

Although an adjustment may be authorized to take care of substantial hardship in the case of an individual chemical manufacturer, incident to increased packaging costs, it must be shown that economies are not available through use of cheaper containers, made of fiber or paper.

"While it is realized fully that some chemical manufacturers will be forced to utilize glass carboys, tight barrels or other containers more costly than steel drums, revision of the company's maximum price to reflect higher packaging costs will not be granted unless it is demonstrated that the concern has explored thoroughly the possibilities of substituting a cheaper container than those made of steel," the OPA has stated on this point.

The increasing stringency in the field was reflected around the first part of this month in several additional moves at Washington—after November 30, packing of varnishes and drying oils in blackplate metal containers will be prohibited; beginning December 15, oil paints, oleoresinous paints, and resin-emulsion water paints must be packed in one-gallon fiber-bodied containers, with only the ends of blackplate. (Amendment No. 2 to M-136.) This provision terminates on December 31, after which new restrictions, to be announced shortly, will become effective.

The same regulation covers pigmented lacquers for the first time, but until December 15, this product may be packed in one-gallon blackplate containers. The amendment however, curtails by 10 per cent the use of blackplate for packaging all of the above-mentioned products, thus reducing the total allocation for 1942 for those products, to 90 per cent of the 1940 pack. Blackplate quotas for baking powders are continued to December 31, under the amendment.

A further move placed new steel drum containers and parts in the hands of manufacturers under complete allocation control as of November 3. The aim is to channel delivery of these containers to only the most essential uses of the production program. The pressure for substitutes for container manufacture is emphasized by the revelation just made at the time of these orders, that sheet steel allotted for manufacture of steel drums had been found insufficient to meet all orders bearing even AA-1 or higher. The new restriction is contained in an order, M-255, which thus tightens the provisions of L-197, (the latter scheduled to become effective November 14) so that under M-255, packaging of permitted products in new drums, as allowed under 197, must be by authorization.

An earlier order prohibits use of tinplate in packing pyrethrum and rotenone base insecticides, for which blackplate or glass is to be used instead. (Amendment No. 4 to M-81.)

Other Chemical News

Net sales by 38 chemical corporations, as reported in a study by Securities and Exchange Commission, showed a combined total of $1,755,000,000 in 1941 compared to $1,253,000,000 in 1940.

Net profit from operations according to the same survey, showed a combined total of $431,000,000 in 1941, compared to $275,000,000 in 1940. Net profit after all charges showed $223,000,000 in 1941, against $210,000,000 the preceding year; total dividends reported in 1941 for the group were $172,000,000 against $165,000,000.

The same survey covered operations of five corporations manufacturing fertilizer. Net sales showed a combined total of $84,000,000 in 1941, compared to $75,000,000 the preceding year. Net profit from operations showed $5.3 millions against $3.2 millions in 1940; net profit after all charges showed $3.9 millions compared to $2.6 millions in 1940. Total dividends were $1.7 millions against $1.2 millions.

The fertilizer corporations whose combined figures were reported included: American Agricultural Chemical Company (Del.); Davison Chemical Corporation; International Minerals and Chemical Corporation; Tennessee Corporation; Virginia-Carolina Chemical Corporation.

The thirty-eight corporations comprising the chemical group are:

Air Reduction Company, Incorporated
Allied Chemical & Dye Corporation
Atlas Powder Company
The California Ink Company, Inc.
Catalin Corporation of America
Clorox Chemical Co.
Columbian Carbon Company
Commercial Solvents Corporation
Consolidated Chemical Industries, Inc.
The Dow Chemical Company
E. I. du Pont de Nemours and Company
General Aniline & Film Corporation
General Printing Ink Corporation
Hercules Powder Company
The Hilton-Davis Chemical Company
Interchemical Corporation
International Products Corporation
Koppers Company
Lac Chemicals, Inc.
Lindsay Light & Chemical Company
The Liquid Carbonic Corporation
The Mathieson Alkali Works, Inc.
Monroe Chemical Company
Monsanto Chemical Company
National Cylinder Gas Company
National Oil Products Company
Newport Industries, Inc.
Novadel-Agene Corporation
Parker Rust Proof Company
Pennsylvania Salt Manufacturing Co.
Union Carbide and Carbon Corporation
United Carbon Company
United Chemicals, Inc.
United Dyewood Corporation
U. S. Industrial Alcohol Co.
Victor Chemical Works
The Warren Refining & Chemical Co.
Westvaco Chlorine Products Corporation.

Allocation of phenol extended to include certain substituted phenols and phenol-bearing materials—General Preference Order M-27, Nov. 3.

Complete allocation December 1 on phenolic resins, phenolic resin moulding compounds—General Preference Order M-246, Nov. 4.

Price ceilings on fertilizers allowed 8 per cent raise shortly, to cover increased nitrogen and transportation costs since February 16-20, 1942 base period. New regulation in next 4-5 weeks. (Nov. 6.)

Foreign or import fats and oils purchases by Government exempted from all price control—Amendment No. 15 to R. P. Schedule 53, effective as of October 28. (Nov. 6.)

Terneplate containers barred after Nov. 30 for packing varnish removers, liquid lacquers, lacquer thinners, lacquer stains and shellac. Substitute glass or fiber containers ordered—Amendment No. 5 to M-81. Also provides terneplate used for packaging these products must not exceed 90 per cent of 1940 consumption, and packaging of edible liquid oils in tin or terneplate containers of less than 5-gallon capacity. (Nov. 5.)

Substitutes for phenolic plastics and shellac declared vital in new WPB listing of scarce critical materials.

Economics of Latin American Oils and Fats

This country is looking to Latin America to meet the crisis in oils and fats. To what extent our potential Latin American trade in these products can be increased depends on the effort we make in the form of financing, technical help, shipping facilities and ability to dispel distrust. The government has made some excellent progress in this direction. This article describes all the possibilities and potentialities.

By Benjamin Levitt, F. A. I. C.

STIMULATED by the war, there has been a considerable increase in the consumption of oils and fats, for both edible and technical uses. Not only are our own needs greater, but our allies are becoming daily more dependent on our ability to supply them with these needs, as the usual supplies are being gradually restricted by ship sinkings and occupation of territories by the enemy. It may well be said that our oil consumption is nearing 11 billion pounds a year, of which 15 to 20% are imported.

To meet this crisis, we naturally first look to our own farmers to plant more acreage and raise more livestock. On the second line of defense are our "good neighbor countries" to the south, who are being encouraged to produce some of our oil requirements.

The war has cut our supplies of cocoanut oil, copra, rapeseed, palm, tung, olive and a number of very necessary essential oils.

To what degree our potential Latin American trade in oils can be increased, depends on the effort we make in the form of financing, technical help, our ability to overcome natural obstacles to ship materials to U. S. despite Hitler's U boats, and our ability to dispel distrust.

Toward the goal of South American development, the Export-Import Bank has extended credits up to $100,000,000 to Brazil, the R.F.C. has made available $5,000,000 for development of wild rubber resources of the Amazon Basin and $14,-000,000 has already been granted to the Amazon Basin Development Co. for the rehabilitation of the Brazilian R.R.

As everyone knows, negotiations are

under way, with most of our Latin neighbors, for the development of the various natural resources, and agreements are announced almost daily. Furthermore, technical missions have been sent to several countries. Of 11 rubber specialists six were sent to Brazil, the others to Colombia, Ecuador, Peru, Bolivia and Central America. Eight mineral technicians have been assigned to Brazil and four to Peru. A mission to investigate the possibilities for development of vegetable oils, has already returned from Brazil. Mr. John B. Gordon, secretary of the Bureau of Raw Materials, for American Vegetable Oils and Fats Industries, who was a member of this commission, told the writer that the Brazilian producers as well as the Brazilian government are willing to co-operate, but there are several essentials. 1. Proper working capital; 2. Improvement of railroads; 3. A system of highways must be built for the transport of oil seeds and nuts from the jungle to waterways and seaports. In several cases in northern Brazil, there is need for harbor development. Mr. Gordon's personal diary of his trip through northern Brazil is very interesting and informative.

At this writing, Dr. George S. Jamieson, senior chemist, Bureau of Agricultural Chemistry and Engineering, who was also a member of the commission, advised the writer that the complete report has not yet been published.

Evidence that we are willing to finance such operations, will dispel suspicion on the part of the South Americans that they will be left "holding the bag" when hostilities cease. These credits are to be extended for a period of years, and tariffs will have to be arranged so as to make the new enterprises profitable to the producers even in peace time.

Moreover, to prove our good will, there is a movement on foot, fathered by Mr. Nelson Rockefeller and his Office of Inter-American Affairs to improve the social status of our Latin neighbors. New and revolutionary means are being taken to improve housing and health of the workers and their families, and to raise their standards of living in general.

Brazil

Brazil has 20 varieties of known oil-bearing plants. It is the seventh producer country of vegetable oil in the world, having exported 23,438 metric tons in the first six months of 1941, and yet only cottonseed and castor seed have been produced on a large scale.

In the ten year period 1929-38, Brazil's total export of oleaginous seeds rose from 94,057 tons to 230,000 tons. Its castor bean export rose from 34,000 tons in 1933, to 118,028 tons in 1937. Its export of babassu kernels and oil was valued at

The table (right) shows the variety of oils capable of further exploitation.

Oil	Source	Type	K No.	I.V.	Titer °C.	°C. M.p.	% Yield
Andiroba	W. I. & Brazil	N. D.	195–6	58–78	35–37		13
*Aoura Kern.	Cent. & S. A.	N. D.	242–9	10–11	26	29–30	46
Mex. Poppy Argemone	Mexico	S. D.	193	124	23		36
*Babassu	Brazil	N. D.	247–50	14–16	22		63
Bacaba	Guiana tropical	N. D.	192	78			
Bacury Ker.	S. A.	N. D.	199.5	78		51	66
Baratinha		N. D.	181	78			60
Cocoa Butter	W. I., Cent. & S. A.	N. D.	191	41	48.4		
Cashew	Brazil & W. I.	N. D.	195	84			
Castor	Brazil Haiti, Col.	N. D.	177–187	82–90			45
Cocoanut	Trop. Amer.	N. D.	251–264	8–10	23		63
Coffee	Brazil Brit. Hon.	N. D.	165–177	85–90		38–40	9
*Cohune	Guatemala Mexico	N. D.	251	8–9	21		
Copaiba	Brazil, Col. Venezuela	D.	77.8	174			essential 40
Cottonseed	Brazil, Arg. Peru, Mex.	S. D.	192	103–115	32–38		15.5
*Coyol	Costa Rica Guatemala Mex. Panama	N. D.	246	25			48
Cumaru		N. D.	189	66.2			essential
Dende	Brazil	N. D.	199	78–83		22–30	
Gergelim		S. D.	187	104			
Jaboty	S. A.	N. D.	228	23		45	42–53
Jupaty			194	77			
Licuri		N. D.	233	23		45	
Linseed	Argentina Uruguay	D.	189–196	179–204	19–21		34
Mahuba	Brazil		252	18	40–44		50
Mamorana		N. D.	176–186	81–90			
Maripa see Uricury		N. D.	256–270	4–17		18.3	
*Mocaya (gru-gru)	Trinidad Paraguay	N. D.	240	16–24	20–23		60
*Muru-Muru	Brazil	N. D.	240	5	33–36		36
*Murita fat	Trinidad Jamaica Brazil	N. D.	246	25	17		
Nutmeg fat	Brazil Guiana W. I.	N. D.	174	57		48	essential 12%
Ocuba fat	Brazil					39–40	
Oiticica	Brazil	D.	188–194	145–179			
Olive	Chile Argentina	N. D.	185–200	74–94	18–25		25–30
Palm Ker.		N. D.	242–243	10–16	20–25		33–37
Patua	Brazil	N. D.	196	75	17	(This oil resembles olive)	
Peanut	Argentina Brazil Mexico	N. D.	185–192	83–95	28–32		40–50
Piquia							
Royal Palm	Costa Rica	N. D.	200	26.4			
Pracachy			170–177	69			51
Rapeseed	Argentina	S. D.	168–180	98–106	12		35
Rubberseed	Amazon Basin	S. D.	185–206	117–133			
Sawari fat Butternut	Brazil	S. D.	199	49.5	23–29		
Sesame	Mex. Brazil Cuba, Arg.	S. D.	188–193	103–115	21–24	.	47
Soy bean		S. D.	189–193	122–135	20		15–20
Sunflower	Argentina	S. D.	189–194	120–136	17–20		
Teaseed	Guatemala	N. D.	197	85	20		
*Tonka Butter	Guiana, W. I.	N. D.	257			28	
Tucum (Aouara)	Guiana	N. D.	220	46		27–30	44
Tucuma Ker.	Brazil Guiana Venezuela	N. D.	220	11.6		30.5	52
Tung	Brazil Argentina	D.	189–195	160–170	37–38		
†Ucuhuba	Brazil	N. D.	219–221	9–14	45		
Uricury	W. I. & Brazil	N. D.	242	12.8	25–36		
Virola fat	Venezuela	N. D.	221	12.4		47	

* Belong to Cocoanut oil group.
D. Drying.
S. D Semi-drying.
N. D. Non-drying.
† Contains 12.6% Lauric acid and 63.2% Myristic acid.

	Type	1000 Lbs.	% of Total Imported
Group 1.	Cocoanut	98	0.01
	Palm	35	0.02
	Babassu nut	62,803	100.00
	Palm Kernel	1	0.01
	Cottonseed	11,360	94.42
Group 2.	Linseed	224,864	99.42
	Castor	74,428	69.52
	Oiticica	15,537	100.00
	Rapeseed	1,324	10.25

Above, is a portion of a table compiled by the U. S. Tariff Commission, showing the amount of oil imported from the Western Hemisphere during 1940.

$3,075,000 in 1940. The same year U. S. imported 15,537,000 pounds of oiticica oil, of which Brazil is the chief producer. Export of the seed is prohibited. There is about $15,000,000 invested in the vegetable oil industry.

Cottonseed oil industry is the largest because of Brazil's industrialization of cotton, with a production of 450,000 tons of raw cotton.

Exports of vegetable oils in order are: cottonseed 56.3%, oiticica 34.3%, castorseed 9%, copaiba 0.2%, and cocoanut 0.1%. There are a number of other oils produced, but little exported. Included among those are babassu, linseed, corn, andiroba and uchuba.

Trade balance between Brazil and U. S. in 1938 amounted approximately to $36,000,000. Brazilian products were valued at $98,000,000, while shipment from U. S. aggregated $62,000,000.

Argentina

Sunflowerseed oil is the greatest in point of production and amounts to 70% of the entire output. Production of this oil has increased tenfold in the past six years. Cottonseed ranks second, with a production of 17,339 metric tons. Other vegetable oils produced are peanut, rapeseed, grapeseed, olive and tung. Flaxseed is exported. Argentina imports less than 10% of its oil consumption.

The grand total shows that 24.07% of all the vegetable oils imported into U. S. came from the southern republics. There are possibilities for much further development.

Essential Oils and Oleoresins

Among the possibilities for replacement of oils which are no longer obtainable from the eastern hemisphere, those below, may fill the gap, and at the same time further promote hemispheric cooperation with our southern friends. In view of the fact that different sections of Latin America can match the climatic conditions existing anywhere in the eastern hemisphere, it should be possible to cultivate almost any type of crop.

Some of these have been imported for some years into U. S., others should be further exploited. It has been stated that early shipments of essential oils received from South America were not equal to the high standards for these commodities, as are required by our essential oil trade. This can be overcome by sending technologists to teach producers how to prepare oils which are suitable. In fact this has been done by some of our well known factors in the field.

Adiantum Amabile is a Brazilian fern which has the odor of fougere or coumarin.

Amarylis, native of S. A. with a lily type of fragrance.

Ambrosia oil is distilled from Chenopodium ambrosioides, which has the scent of geraniol.

Balsam Peru, an oleoresinous exudation from the trunk of myroxylon Pereira, grows in Peru and Central America. It is useful in perfumery and medicinally.

Balsam Tolu is obtained by incision of a tree which grows in Bolivia, Peru and other parts of S. A.

Bois de Rose Femelle from which cayenne and lignaloe oil is distilled, habitat French Guiana, also Mexico and Brazil.

Boldo leaf oil is distilled from a Chilean plant, which contains 2% of a volatile oil recalling the odor of cymene or Baltimore wormseed.

Cananaga or Ylang-ylang is produced in Brazil and French Guiana. The best quality is obtained from Manila.

Canella oil is distilled from the bark and twigs of a West Indian tree. It is the cinnamon of the Orinoco.

Clove oil is obtained from the West Indian Euginia caryophyllata. This is the oil from which eugenol is derived, once the best source of vanillin.

Copaiba resin is the exudation of a tree which grows in the Amazon valley.

Fangipanni is the name given to a flower oil of the Plumeria Rubra, which grows in the West Indies. It has the odor of jasmine.

Ginger oil is distilled from a rhizome, zingiber officinale. It is cultivated in Jamaica.

Guiacum wood oil is derived from bulnesia sarmienti. It has the odor of tea roses.

Jaborandi leaves contain 0.5% of essential oil resembling rue. The tincture is used in hair preparations.

Laurel leaf oil, native of Chili, is used there as a kitchen spice. Safrol is the chief constituent.

Lemongrass, orange mandarine and safrol are exports of Brazil.

Liquid styrax is a viscous transparent liquid with a balsamic odor. It is produced in Honduras.

Tuberose oil from Polianthis tuberosa of Central America.

Vanilla pods indigenous to tropical America. The finest is grown in Mexico.

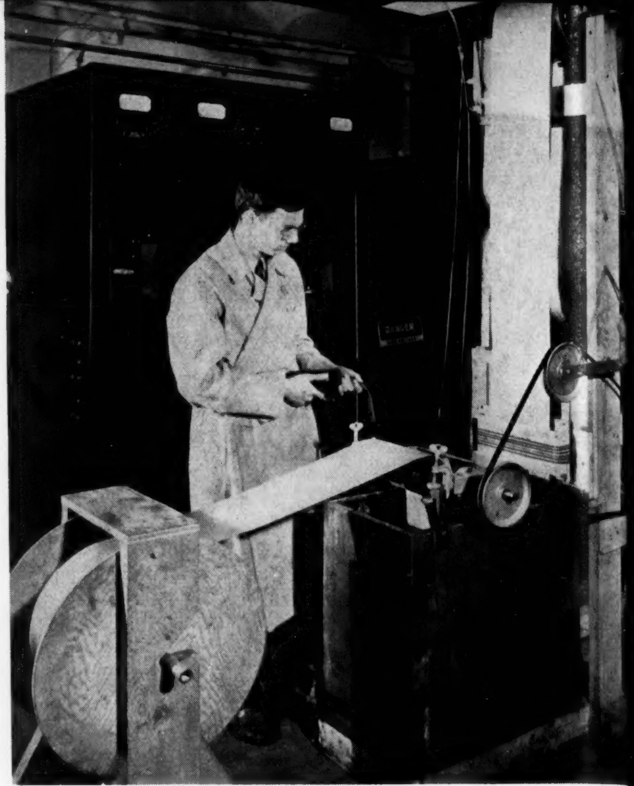
United States Imports, 1939, of Essential or Distilled Oil Not Containing Alcohol

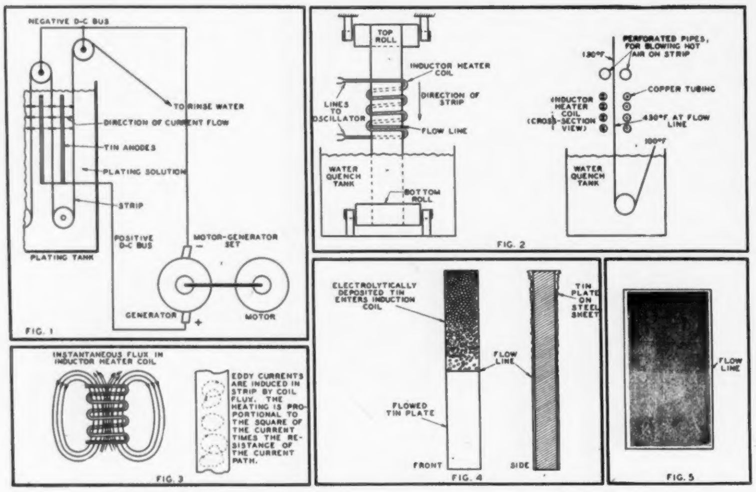
	Pounds	Dollars	Origin
Citronella	165,865	39,010	Guatemala
Lemongrass	63,915	21,947	Guatemala
Orange (including Mandarin)	7,295	8,367	Jamaica
Lime	32,869	63,048	Mexico
Lime	10,255	25,642	Jamaica
Lime	51,970	123,838	Trinidad & Tobago
Lime	24,897	67,813	Other British W. I.
Lime	220	550	Haiti
Lime	1,288	3,038	British Guiana
Lignaloe or Bois deRose (Rosewood Oil)	2,911	2,644	Mexico
Lignaloe	237,508	275,273	Brazil
Lignaloe	5,181	8,043	French Guiana
Petitgrain	405	765	Haiti
Petitgrain	4,410	3,065	Argentina
Petitgrain	136,110	87,405	Paraguay
Petitgrain	4,400	2,351	Uruguay
Other Oils	23,642	38,826	Jamaica
Other Oils	21,208	13,993	Other British W. I.
Other Oils	617	923	Paraguay
Other Oils	353	467	Uruguay

Sources: Lewkowitsch—Technology of Oils, Fats and Waxes.
Jamieson Vegetable Oils.
Poucher Perfumes, Cosmetics & Soaps.
U. S. Dept. of Commerce.
U. S. Tariff Commission.

Induction Heating Speeds Tin Plate Output

Pilot model set up by Westinghouse for testing. →





To save dwindling supplies of tin, high frequency induction heating is now producing a smooth, shiny, corrosion-resisting finish on tin plate urgently needed.

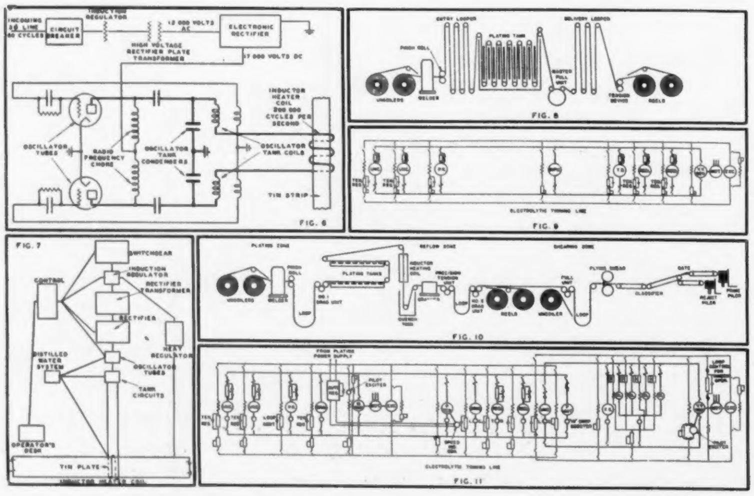
The new high frequency method of fusing tin was developed by Westinghouse research and radio engineers as an answer to the problem of boosting output to keep pace with rapidly-growing requirements of the armed forces and at the same time use a minimum of tin. It was designed as the final step in making electrolytic tin plate, a process which uses only one-third as much tin as the system of dipping steel sheets into tanks of this molten metal. The need for a suitable tin fusing was so urgent that research work which would normally require two years was made in less than six months.

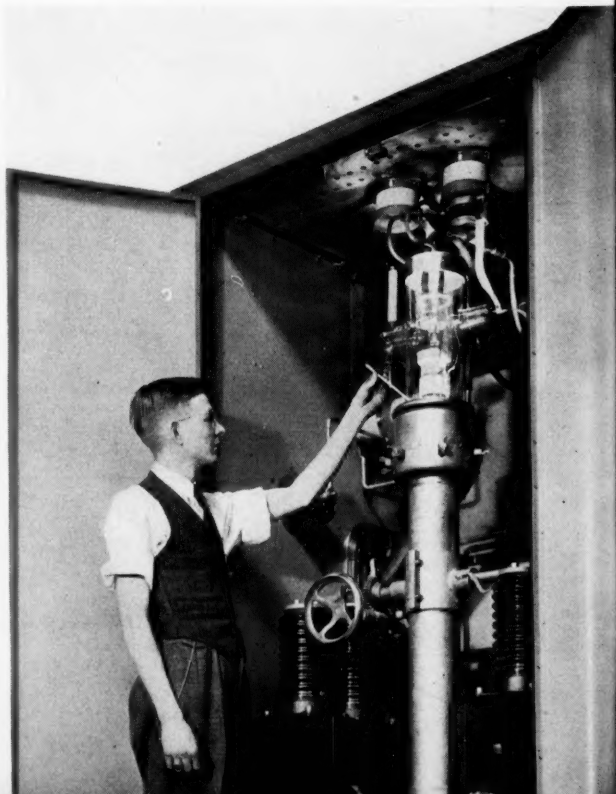
The dull, rough electrolytically tinned steel sheet is passed into the inductor heater coil where it is heated to the fusion point of the tin. As the tin plate melts, it flows into a bright shinv surface. As the dull strip moves through the coils, radio waves, 200,000 cycles per second, are passed around the metal, setting up counter currents near the surface and melting the minute peaks down into the tiny valleys. Melting action stops when the strip moves out of the coil and the water cools the metal.

Present electrolytic lines operate at a speed of 500 feet per minute, but it is expected they will go up to 1,000 feet per minute. This new induction heating method of finishing the tin plate could easily match that speed, whereas gas furnaces operate at only 150 feet per minute and the hot oil treatment is extremely slow—about 50 feet a minute.

Key units creating the high frequency tin-smoothing waves are vacuum tube oscillators, essentially the same as the transmitter of a radio station. Alternating current, similar to that used for home lighting was first converted to direct current, then fed to the oscillator tubes where it is "chopped up" into high frequency alternating current, so called because it changes direction 400,000 times a second.

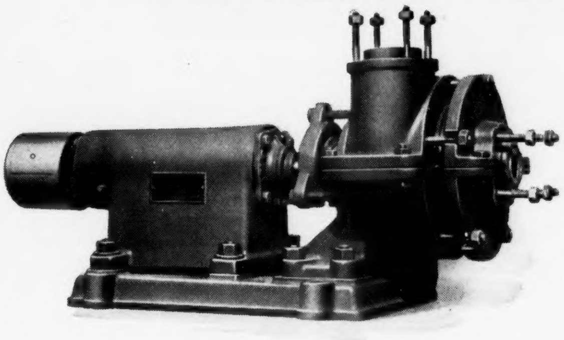
Glenn E. Stoltz, manager of the metal working section of the Westinghouse engineering department, conceived the idea of using radio waves to heat the tin coating to a point where it would flow evenly over the steel foundation. Actual experimental work was carried out by R. M. Baker, Westinghouse research engineer, while the necessary radio apparatus was developed by Milton P. Vore, design engineer at the Company's Baltimore Radio Division.





Vacuum oscillator tubes supply high-frequency power. →

Handle corrosive liquids with *Acid-Proof* ceramic lined pumps



General Ceramics Armored Stoneware Centrifugal Pumps are increasing in use in the chemical industries. With them, it is possible to handle all corrosive liquids excepting hydrofluoric acid. All pump parts that would be subject to corrosion are made of high-grade acid-proof chemical stoneware. In addition to the prevention of corrosion, the liquids remain unimpaired. For this reason, General Ceramics Centrifugal Pumps are ideal for use with sensitive dyestuffs, bleaching agents, fine chemicals, pharmaceuticals, and food products.

A few of the many applications of these pumps are for handling such corrosive materials as:

Arsenic Acid
Chlorinated Brine
Copper Sulphate
Fruit Juices
Hydrogen Peroxide
Muriatic Acid
Mixed and Waste Acids
Nitric Acid
Sulphuric Acid
Tetrachloride of Tin
Vinegar
Zinc Chloride

GENERAL CERAMICS CO.
KEASBEY, NEW JERSEY

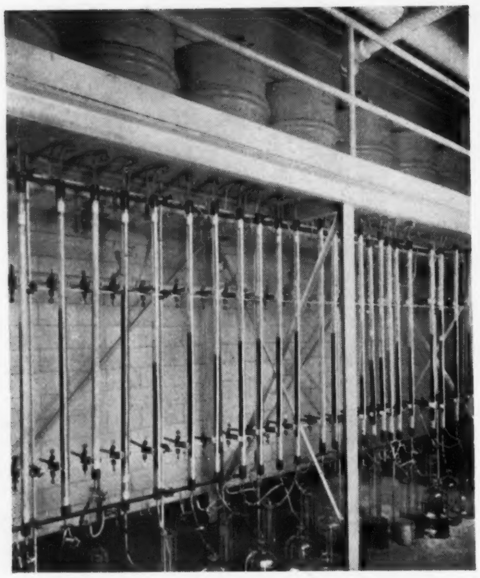
GENERAL CERAMICS COMPANY
CHEMICAL STONEWARE

NEW YORK, 30 Broad Street; BUFFALO, 306 Jackson Building; SAN FRANCISCO, 598 Monadnock Building; CHICAGO, 208 South La Salle Street; SEATTLE, 1411 Fourth Avenue Building; LOS ANGELES, 415 South Central Avenue; SPOKANE, 3219 Wellington Place; PORTLAND, 3019 N. E. 26th Avenue; TACOMA, Tacoma Building; MONTREAL, Canada Cement Building; TORONTO, Richardson Agencies, Limited, 454 King Street, West.

Our Engineering Department will gladly assist you in any problem you may have involving the handling of acids and other corrosive substances.

3325

New Synthetic Ion-Exchange Resins Will Find Universal Use



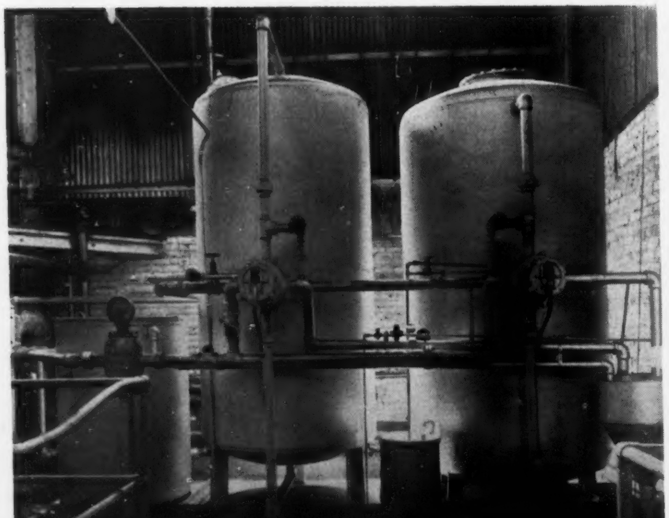
A typical Resinous Products & Chemical Co. Laboratory experimental set-up for evaluating their newly-developed ion-exchange resins. The solutions in the canisters on the shelf test the exchanging power of the resins in the columns.

There is scarcely a major industry in the U. S. in which there are not applications for the newly developed synthetic ion-exchange resins, according to Dr. Robert J. Myers, of the Resinous Products & Chemical Co. Laboratories, Philadelphia. Speaking before the Western New York Section of the American Chemical Society in Buffalo Nov. 17, Dr. Myers declared that though the ion-exchange resins have found their biggest practical use in water conditioning and softening, many special new applications are now in the development stage.

"Desalting" aqueous solutions of carbohydrates with an increased sucrose yield from cane and beet sugar syrup is one of the outstanding special applications of the resins. Aqueous solutions of formaldehyde, gelatin, etc. may likewise be "desalted." In these cases, dialysis is often the only alternative and the low cost, high efficiency, and throughput of the ion-exchange resins have made them of very real value.

Describing the properties of the ion-exchange resins, Dr. Myers stated that experiments show that their exchange capacity depends more on chemical constitution than on mere composition. They can be used as selective adsorbents in columns where chromatographic banding occurs. Their more flexible structure means lower attrition losses. Experiments prove that there is no appreciable decrease in capacity as the number of cycles is increased.

The advent of the synthetic ion-exchange resins makes it possible for the first time to remove all dissolved salts from water and other aqueous solutions by chemical reaction alone. Water so produced is comparable in quality and purity to distilled water.



A typical boiler feed-water installation using Amberlite ion-exchange resins to supply soft, de-ionized water.

Two 32 cu. ft. water-softening units in a boiler house. Amberlite ion-exchange resins assure a supply of salt free water.

AVAILABLE NOW-

in reasonable quantities, those who require an anhydrous alcohol, resin reactant or specialty solvent, would do well to consider and investigate the possibilities offered by

Furfuryl ALCOHOL

Most uses of Furfuryl Alcohol depend on the fact that it will resinify in the presence of dilute mineral acids or acidic salts. This is an advantage in the manufacture of heat-setting binders, coating compositions, and molding materials. Our Bulletin 58 describes the application of such a resin to wood and other porous surfaces and a copy will gladly be sent upon request.

Other uses are as a dye solvent, acid-resisting cement, and impregnating agent. If you have a problem embodying any of the possibilities of Furfuryl Alcohol, let us know and we shall be glad to supply all available information.

The Furans

FURFURAL
FURFURYL ALCOHOL
TETRAHYDROFURFURYL ALCOHOL
HYDROFURAMIDE

Write for this New Booklet

TYPICAL PROPERTIES

Specific gravity	1.131
Freezing point	—20° C.
Boiling point	167–177° C. (95%)
Flash point (open cup)	75° C.
Refractive index (25/D)	1.4868

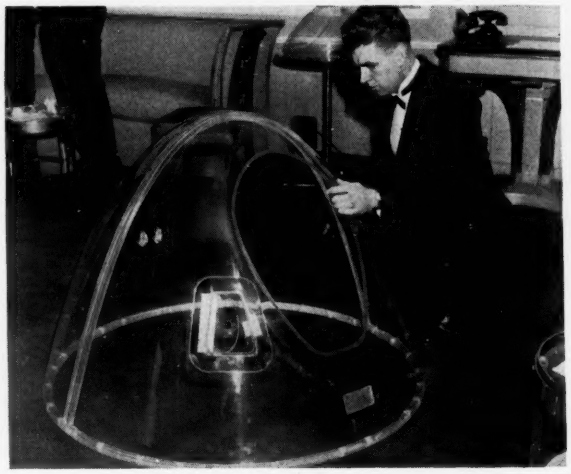
The Quaker Oats Company

TECHNICAL DIVISION 3–11
141 W. JACKSON BOULEVARD . . CHICAGO, ILLINOIS

FURFURAL – FURFURYL ALCOHOL – HYDROFURAMIDE . . . TETRAHYDROFURFURYL ALCOHOL . . .

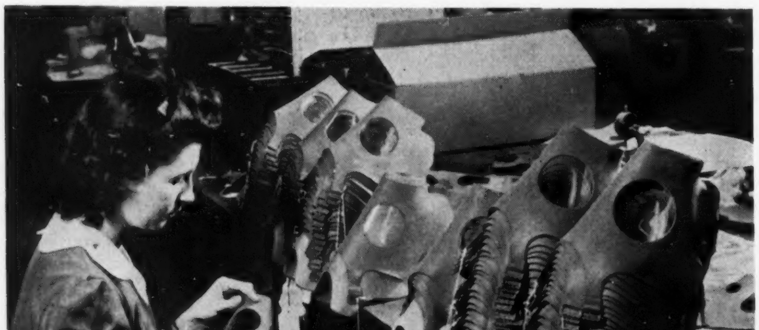
Here and There in the Industry

General Electric recently shipped, five weeks ahead of schedule, the first two of fifteen 1500-h. p. motors it is building for the new War Emergency Pipe-line now being rushed to completion to help alleviate the oil shortage in the east. Production is now being expedited on the other motors, and the Company expects to beat the schedule date on these as well. The 1500-h. p. motors will be used to drive centrifugal pumps in booster stations at spaced points along the pipe line. These pumps will keep 1,330,000 barrels of oil flowing at a rate of 4 miles per hour or a delivery rate of 300,000 barrels a day at Norris City.



Large transparent sheets of methyl methacrylate plastic molded here to make the "nose" on an American bomber, won the John Wesley Hyatt Award for Dr. Donald S. Frederick (right) as an outstanding contribution to the plastics industry for 1941.

One of the women production soldiers working on non-combatant gas masks at a B. F. Goodrich plant is shown preparing the "business end" of a face blank for attachment of the filter unit. The production program for these simplified masks designed for civilian protection has been pushed forward rapidly in recent weeks, with shipments being made to coastal areas first.



NEUTRAL ALKYL PHOSPHATES

A Group of Organic Phosphorus Compounds That Offer Interesting Possibilities for Further Chemical Research

The *organic phosphorus compounds* are much less familiar in the industrial field than the *inorganic phosphorus compounds.* The last few years, however, have witnessed a marked increase in research on the former . . . on the alkyl esters of phosphoric acid in particular. The result has been that many interesting applications have already been suggested. Among them are the following:

Plasticizer in cellulose acetate, in organic acid derivatives of cellulose, and in synthetic resins of the phenol-aldehyde type.

Waterproofing textiles with cellulose acetate.

Accelerators for curing urea-formaldehyde resins.

Polymerizing agents for unsaturated hydrocarbons, drying oils, resins, etc.

Catalysts for the dehydration of glycols and olefinic alcohols to diolefins such as butadiene.

Absorbing fluids in refrigeration systems.

Leveling liquids in printing compositions for vat dyestuffs.

Corrosion inhibitors for gun barrels, bearings of meters and compressors, etc.

Properties of the Neutral Alkyl Phosphates . . . the subject of exhaustive study in the Victor Research Laboratories . . . are summarized in the table below. From the latter it is apparent that a combination of the proper alkyl and phosphate groups will produce compounds which possess, within indicated limits, properties to meet widely varying requirements. Some of these compounds are already in commercial production; others are available only in laboratory quantities. Additional information, as well as samples intended for further research, will gladly be sent upon request.

PROPERTIES OF NEUTRAL ALKYL PHOSPHATES

COMPOUND	Mol. Wt.	Sp. Gr. at x°/4° C.	B.P. °C.	Ref. Index ND	SOLUBILITY						
					Water	Alcohol	Acetone	Ether	Toluene	CC14	Naphtha
Orthophosphates, R_3PO_4											
Trimethyl phosphate	140	1.2052(25)	196	1.3950							
Triethyl phosphate	182	1.0637(25)	215	1.4039							
Tri n-propyl phosphate	224	1.0023(25)	252	1.4136							
Tri n-butyl phosphate	266	0.9727(25)	289	1.4203							
Tri i-butyl phosphate	266	0.9617(25)	264	1.4173							
Tri n-amyl phosphate	308	0.9497(25)	225(50mm)	1.4283							
Trimethallyl phosphate	263	0.988 (26)	135 (5mm)	1.445							
Trioctyl phosphate	434	0.921 (25)	210 (8mm)	1.442	I	S	S	S	S	S	S
Tricapryl phosphate	434	0.907 (25)	Decomp.	1.437	I	S	S	S	S	S	S
Pyrophosphates, $R_4P_2O_7$											
Tetramethyl pyrophosphate	234	1.357 (25)	Decomp.	1.410	SR	SR	S	SS	PS	I	I
Tetraethyl pyrophosphate	290	1.200 (25)	Decomp.	1.417	SR	SR	S	S	S	S	I
Tetrabutyl pyrophosphate	402	1.050 (25)	Decomp.	1.429	R	SR	S	S	S	S	S
Tetraoctyl pyrophosphate	626	0.977 (25)	Decomp.	1.443	R	SR	S	S	S	S	S
Tripolyphosphates, $R_5P_3O_{10}$											
Pentamethyl tripolyphosphate	328	1.430 (25)	Decomp.	1.420	SR	SR	S	I	I	I	I
Pentaethyl tripolyphosphate	398	1.245 (25)	Decomp.	1.424	SR	SR	S	I	SS	SS	I
Pentabutyl tripolyphosphate	538	1.095 (25)	Decomp.	1.435	I	SR	S	S	S	S	S
Tetrapolyphosphates, $R_6P_4O_{13}$											
Hexamethyl tetrapolyphosphate	422	1.474 (25)	Decomp.	1.423	SR	SR	S	I	SS	I	I
Hexaethyl tetrapolyphosphate	506	1.280 (25)	Decomp.	1.425	SR	SR	S	SS	S	S	I
Hexabutyl tetrapolyphosphate	674	1.119 (25)	Decomp.	1.435	R	SR	S	S	S	S	S
Hexaoctyl tetrapolyphosphate	1010	1.053 (25)	Decomp.	1.447	R	SR	S	S	S	S	S
Metaphosphates, RPO_3											
Methyl metaphosphate	94	1.620 (25)	Decomp.	1.439	SR	SR	S	I	I	I	I
Ethyl metaphosphate	108	1.420 (25)	Decomp.	1.438	SR	SR	S	I	SS	SS	I
Butyl metaphosphate (unstable)	136	1.227 (25)	Decomp.	1.445	SR	SR	S	S	S	S	I
Octyl metaphosphate (unstable)	192	1.151 (25)	Decomp.	1.450	SR	SR	S	S	S	S	S

Key to Symbols

S = Soluble
PS = Partially soluble
SS = sparingly soluble
I = Insoluble
R = Reacts
SR = Soluble and reacts

ARMY E NAVY

VICTOR *Chemical Works*

HEADQUARTERS FOR PHOSPHATES • FORMATES • OXALATES

141 W. JACKSON BLVD., CHICAGO, ILL., NEW YORK, N. Y., KANSAS CITY, MO., ST. LOUIS, MO., NASHVILLE, TENN., GREENSBORO, N. C. PLANTS: NASHVILLE, TENN., MT. PLEASANT, TENN., CHICAGO HEIGHTS, ILL.

NEW CHEMICALS FOR INDUSTRY

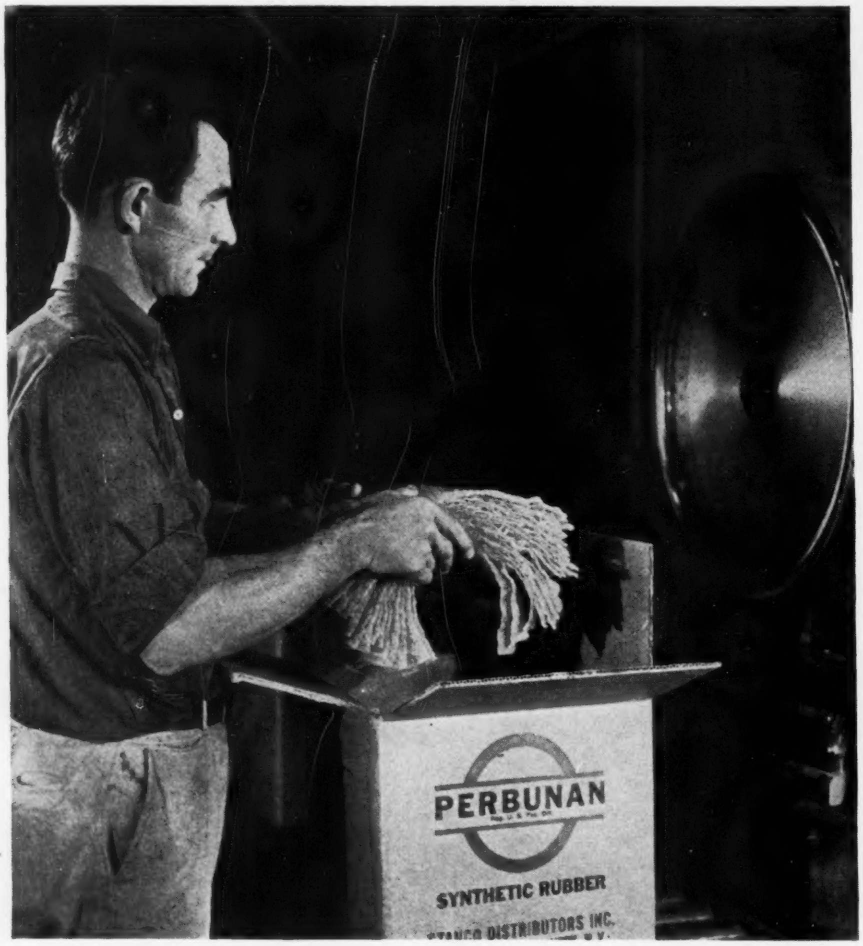
Armstrong Cork has introduced these building blocks of Foamglas—a unique cellular glass made up of thousands of tiny airtight cells—as a permanent addition to its low temperature insulating materials. Here, a workman is erecting blocks of the non-priority product on a refrigerated room wall for insulation.

Digest of Chemical Developments in Converting and Processing Fields

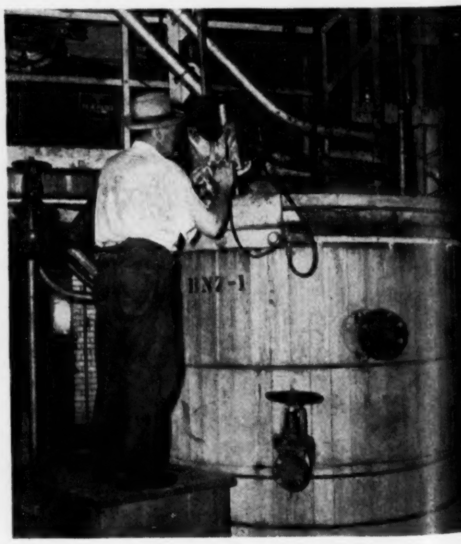
The

In the government's huge synthetic rubber program, Buna S type is called for in greatest quantities. Key hydrocarbon in its production is butadiene and the key industry for this seems to be oil. Here is the complete story on this material

Above, sheet of synthetic rubber made from petroleum refinery gases of Standard Oil Co. Below, Perbunan (Buna N) being packed and weighed at Stanco.



Above, synthetic rubber being taken off moving belt at Standard Oil and piled ready for shipment. Below, agitating tank for coagulation of latex-like liquid from the polymerization.



Production of Butadiene

By Gustav Egloff and George Hulla
Universal Oil Products Co.

BUTADIENE is a key hydrocarbon in the synthetic rubber program. In combination with styrene and isobutene it produces respectively a Buna S and a Butyl type rubber. Butadiene may be made from almost any type of organic compound. Over eighty distinct classes of organic compounds have been converted into butadiene.

At the present time (September 1, 1942) 870,000 tons of synthetic rubber are called for annually by the Rubber Reserve Corporation. This tonnage is divided into 700,000 of Buna S; 130,000 for Butyl, and 40,000 for Neoprene. Dow Chemical Company has a 30,000 ton a year Thiokol program and DuPont an additional production, perhaps, of another 30,000 tons a year.

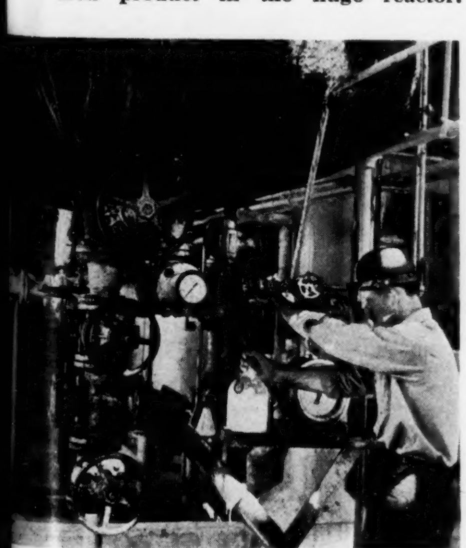
The oil industry will produce over 500,000 tons a year of butadiene derived mainly from normal butane, butenes and naphthas about 200,000 tons will be produced from ethyl alcohol made from farm products.

In the interest of speed the oil industry has undertaken a "Quickie" butadiene production program of over 200,000 tons yearly rate from existing refinery equipment. The "Quickie" butadiene production is a notable cooperative undertaking of the refining branch of the industry, filling a requirement prior to the operation of the "permanent" butadiene plants using normal butane, butenes and ethyl alcohol as charging stocks. For the purposes of the "Quickie" program, available thermal cracking equipment is being converted to process naphthas or gasoline as follows:[1]

1. *Thermal Cracking in Tubes.* "The preferred temperatures of between 1350° and 1450° F. generally limit its use to existing equipment in which high alloy tubes are already installed. Recent reports. . . . indicate possibilities of producing substantial quantities of butadiene in existing thermal cracking units equipped with furnaces containing carbon steel tubes with outlet temperatures of around 1350° F." Floor diagram is shown as figure one: (see illustration, next page).

[1] National Petroleum News *34*, No. 31, 14-38 (1942).

Above, synthetic rubber (Standard Oil) in one stage of the process after emerging from dryer. Next it will be milled. Below, sampling the polymerized product in the huge reactor.



Author's Note

Subsequent to the writing of the foregoing material, President Roosevelt's Rubber Committee (B. M. Baruch, K. F. Compton, and J. B. Conant) has presented its full report.[1, 2] The committee's findings reveal that 211,000 tons of synthetic rubber must be produced at all costs prior to January 1, 1944 for strictly military purposes. Their "significant figures" are:

Crude Rubber Position of the United States

On hand July 1, 1942 (stock pile)	578,000 tons
Estimated imports July 1, 1942 to Jan. 1, 1944	53,000 tons
Total crude rubber	631,000 tons
Estimated military and other essential demands, July 1, 1942 to Jan. 1, 1944, with no allowance for tires for passenger automobiles	842,000 tons
Deficit that must be met by production of synthetic rubber before Jan. 1, 1944	211,000 tons

In answering the question of where are we going to get more stock, the report states:

"If our hopes are realized, the production of Buna S and Neoprene (the two synthetic materials on which we now rely most to replace crude rubber) will total 425,000 tons by the end of 1943."

The committee also directs attention to an ultimate synthetic rubber program of 1,100,000 tons of all synthetics, which it hopes will reach full swing in 1944. Furthermore, the report recognizes that

"It is quite possible, even likely, that before much of the synthetic rubber now planned is produced, better processes will have proven themselves. In any new industry the processes of today are outmoded by the processes of tomorrow, and tomorrow's by those of the next day. However, our need for rubber quickly is too great to wait upon perfection."

Professor A. L. Elder, chief industrial analyst for the War Production Board (WPB), in addressing the American Chemical Society at Buffalo on Sept. 9, 1942, stated that the annual *rate* of synthetic rubber production will approach 717,800 short tons in October, 1943. He maintains that,[3]

"Only a strong and vigorous nation endowed with a wealth of raw materials would have the courage to undertake an output of synthetic rubber from 2,500 tons in 1935, 5,000 tons in 1940, 12,000 tons in 1941, 30,000 tons in 1942, 325,000 tons in 1943 and nearly a million tons in 1944."

[1] Chicago Daily Tribune, Sept. 11, 1942, page 17.
[2] The New York Times, Sept. 11, 1942, page 15.
[3] W. L. Laurence, reporter, The New York Times, Sept. 10, 1942, pp. 1 and 14.

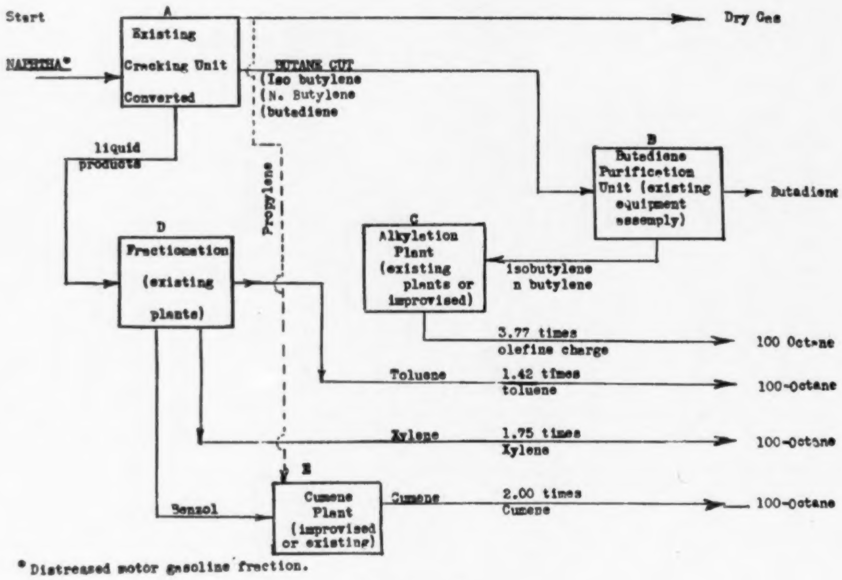


Figure 1.

2. *Thermal Cracking with Superheated Steam.* "Feed is pre-heated in a coil to a temperature of at least 1100° F.; steam also is pre-heated in a separate section of the same heater, and then passed to the regenerative system for further heating. Regenerative system comprises 4 stoves filled with checkerbrick. These are alternately heated to 2000-2200° F. by passing hot products of combustion over the checkerwork, and pre-heated steam passed over the same checkerwork, where it is heated to about 1800° F. in order to maintain the final steam temperature constant with constant steam rate to unit.

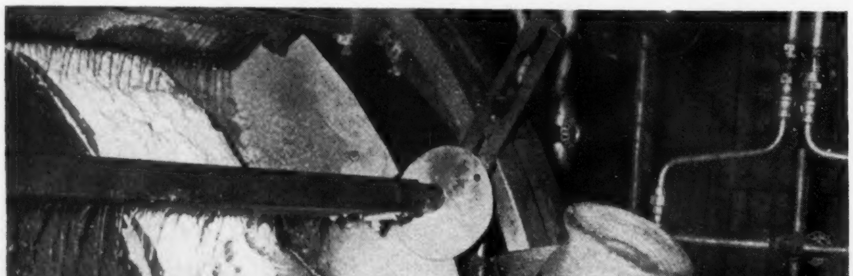
"Steam at around 1800° F. and naphtha feed at 1100° F. will give a temperature of about 1400° F., pressure 3 lbs. per sq. in. and soaking time 0.1 second. Steam and products of reaction are quenched by direct-contact water spray upon leaving the reactor. Overhead products from the condenser are then passed through a recovery system for recovery of butadiene. Yield of butadiene, using heavy naphtha, is expected to be about 4 weight per cent of feed for once-through operation."

3. *Thermal Cracking with Hot Flue Gases.* "This process is similar to the process described above, except that hot flue gas is substituted for steam. One obvious advantage of this method is that the flue gas process is continuous and does away with the regenerative heater cycle. However, it possesses the disadvantage of producing greater amounts of tail gas, thus throwing a greater load on the compressor and fractionating equipment.

"A proposed unit, also a once-through operation, proceeds in this manner: Naphtha is heated to 1100° F. or above in coils in a fixed heater. Steam is also heated separately, in a similar manner, to the same temperature. The two are then united, in a suitably shaped reactor, and mixed with high temperature flue gas—which has been controlled for zero oxygen content—in such proportions that the average mix temperature approximates 1560° F. This reactor is expected to provide 0.1 second reaction time. Reacted material is then immediately quenched to about 700° F. and further cooled in a direct contact condenser, where most of the water vapor would be removed as well as much of the superheat of the flue gas-hydrocarbon mixture.

"The flue gas-hydrocarbon mixture, containing some water vapor, is then compressed to around 125 lbs. per sq. in., cooled, and the compression condensate removed for charge into the depropanizer. Uncondensed hydrocarbon-flue gas is then charged to an absorber where flue gas and some dry gas are removed; the bottoms from the absorption also go to the depropanizer, thence to the debutanizer. Butadiene content in the overhead will probably represent 95 per cent recovery of total production. Yield is about the same as in the steam process, approximately 4 weight-per cent of charge."

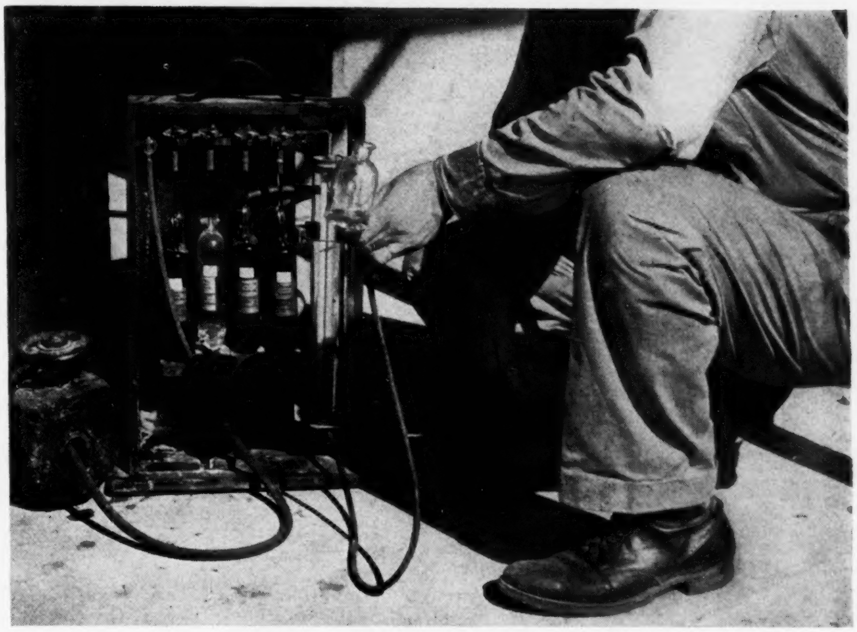
4. *Thermal Cracking with Air Injection.* "This process is like the two preceding processes, except that air is fed directly into the hydrocarbon vapors at the feed pre-heater discharge, instead of superheated steam or high temperature flue gases. By self-combustion of the oxygen of the air injected, the feed temperature is raised to that of reaction, about 1400° F. Tests have been made which indicate butadiene yields in excess of 5 per cent by weight on charge. . . . Naphtha and water are vaporized and superheated to 1100° F., or above, and discharged with air into a refractory-lined reactor quench vessel. The reactor feed consists of a mixture composed of approximately 67 mole per cent steam, 22 mole per cent air, and 11 mole per cent naphtha. Pressure in the reactor is held to approximately 10 lbs. per sq. in. gauge. After the vapors, which now consist of cracked vapors, steam and flue gas, are half-way



Inspecting slurry which is being moved into a filter unit in the process.

through the reactor, they are quenched by direct contact with water and subsequently cooled to around 115° F. in a direct-contact tower. Total products then are compressed to about 75 lbs. per sq. in. and sent to an absorber where, through use of a bottom section stripper, the larger portion of C_2 and lighter is rejected overhead, while about 50 per cent of the C_3 and all of the C_4 fraction are retained in the fat oil. Fat oil then goes to a stripper from which the stripped or lean oil is returned to the absorber and the overhead goes to the debutanizer. C_4 and lighter is taken overhead in the debutanizer while the C_5 plus bottoms leave the system. C_4 and lighter is then stabilized to remove remaining C_3, while C_4 bottoms are discharged to a subsequent butadiene extraction operation."

5. *Thermal Cracking in Superheated Refractory Brick.* "The process consists of charging a vaporized mixture of naphtha and steam to a regenerative furnace, thence to a condenser, compressor, and such other equipment as is necessary for the recovery of the desired product. The regenerative furnace, which is filled with a checkerwork of carborundum bricks, is first heated by the products of combustion of gases burned in a combustion chamber. When the regenerator reaches the desired temperature, the products of combustion are diverted to another identical regenerator. Butadiene yields of 5 per cent by weight of charge are indicated."



Testing a tank to determine its gas and oxygen content before allowing butadiene to enter it at Standard Oil. The entire system must be purged of air.

Fifth Method

The fifth enumerated method is illustrated by the conversion of idle carburetted blue gas equipment to the production of butadiene.[1] Large cities usually have stand-by and reserve plants for the manufacture of fuel gas. These function at most only a few days during the year: on New Year's day, Thanksgiving day, Christmas, or during a cold wave, they ballast the peak fuel load, whereas on other occasions they mitigate a natural gas pipeline breakdown or similar service challenge. Most gas plants have natural gas, butane, naphthas, gas oil, or other butadiene-producing materials on hand at all times and are practically "set" for the conversion of their cracking equipment, exhausters, scrubbers, and gas holders. Where existing carburetted blue gas equipment lacks an efficient oil pre-heater, one must be supplied. Thermal cracking of naphtha, or other recommended feed, requires a preliminary heating in tubular heaters. Refractories (checkerbrick) may have to be re-spaced.

6. *Catalytic Dehydrogenation of Normal Butane into Butadiene.* There are several methods of carrying out the catalytic dehydrogenation of normal butane into butadiene. One of these dehydrogenates butane into butene, separates the lighter gases (such as hydrogen, methane, ethane, ethene) and then dehydrogenates in a second catalytic reactor the unconverted normal butane and butene formed, producing butadiene. Another method is to dehydrogenate butane into butene, separating the lighter gases and concentrating the butenes into a fraction to be converted in a second stage dehyrogenator to butadiene. A third process is to dehydrogenate the butane into a mixture of butadiene and butene, separating the lighter gases and butadiene, and recycling the unconverted butane and butene to the single catalyst chamber.

7. *Catalytic Dehydrogenation of Butene into Butadiene.* Another process converts butene-1 and -2, derived from thermal or catalytic cracking, into butadiene.

Fortunately, practically all organic substances yield butadiene upon intense heating or milder catalytic treatment. Proper selection of the starting material and due consideration of the reaction conditions are essential to obtain economic yields.

It is reported that Germany produces butadiene using ethyne as a starting material whereas Russia uses ethyl alcohol. A schematic diagram illustrates the reaction paths. See below.

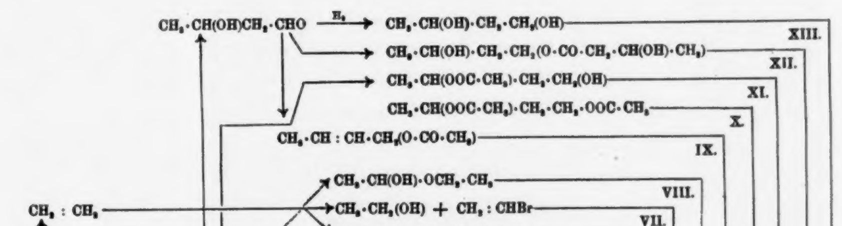
The following data cover over 80 generic reactions known to yield butadiene as one of the reaction products. The wide range of materials yielding butadiene was not anticipated, although it is known that ethene[2, 3] and 2-methylpropane[4] are repeatedly encountered in the field of hydrocarbon chemistry as reaction products.

[1] National Petroleum News *34*, No. 28, 20 (1942).

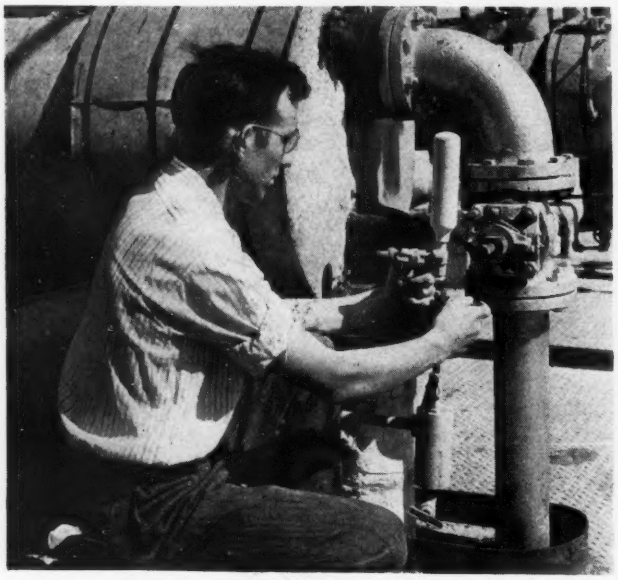
[2] G. Egloff and E. Wilson, Ind. Eng. Chem. *27*, 917 (1935).

[3] G. Egloff, "The Reactions of Pure Hydro-Carbons," Reinhold Publishing Corporation (1937).

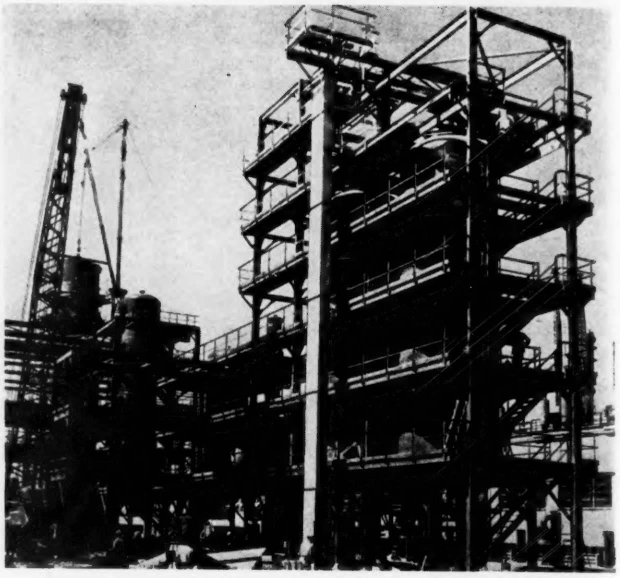
[4] G. Egloff, E. Wilson, G. Hulla, and P. M. Van Arsdell, Chem. Rev. *20*, 345-411 (1937).



Schematic diagram illustrating reaction paths.



Taking a sample of butadiene off production line to check its purity.



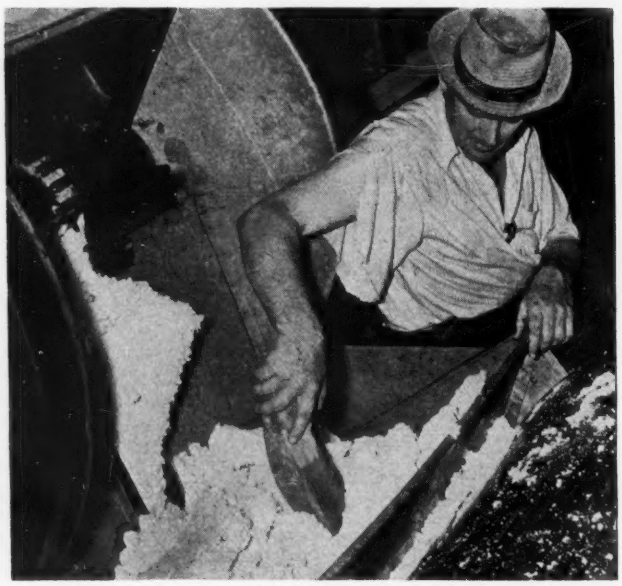
One part of Standard Oil's new butadiene plant showing massive equipment.

METHODS OF PREPARING BUTADIENE

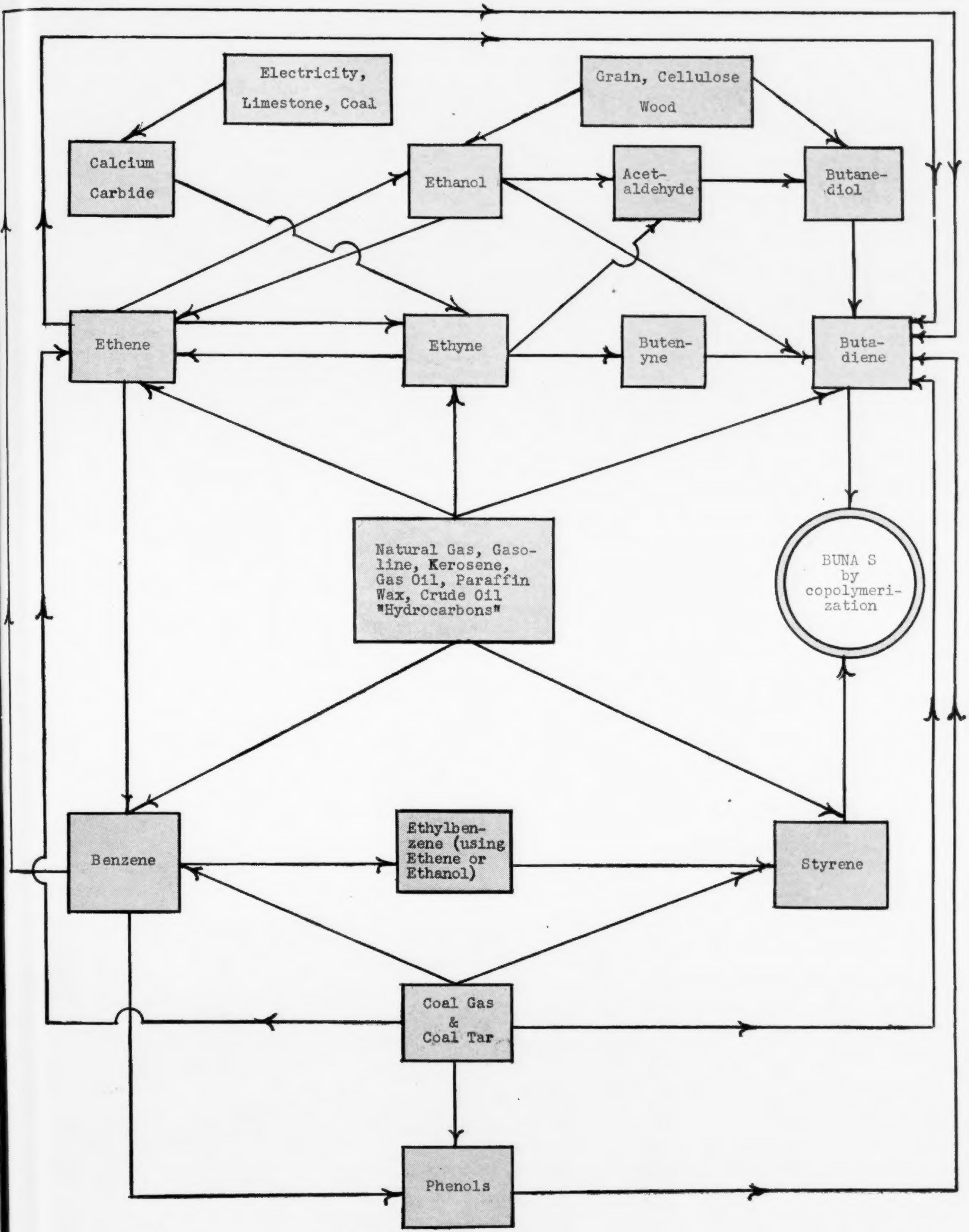
A. Hydrocarbons

- I. Thermal Treatment of Alkanes
  - a. Methane
  - b. Ethane
  - c. Propane
  - d. *n*-Butane
  - e. 2-Methylpropane
  - f. *n*-Pentane
  - g. 2-Methylbutane
  - h. *n*-Hexane
  - i. 2-Methylpentane
- II. Thermal Treatment of Alkenes
  - a. Ethene
  - b. Propene
  - c. Butene-1
  - d. Butene-2
  - e. 2-Methylpropene
  - f. Pentene-1
  - g. Pentene-2
  - h. 3-Methylbutene-1
  - i. 2-Methylbutene-2
  - j. Hexene-1
  - k. 3-Methylpentene-1
  - l. 4-Methylpentene-1
  - m. "Dibutene"
  - n. 2, 4, 4-Trimethylpentenes
  - o. "Decylene"
  - p. *n*-Hexadecene
- III. Thermal Treatment of Alkadienes
  - a. 2-Methylbutadiene-1, 3
  - b. 2, 3-Dimethylbutadiene-1, 3
- IV. Thermal Treatment of Cyclanes and Bicyclanes
  - a. Methylcyclobutane
  - b. Cyclopentane
  - c. Methylcyclopentane
  - d. "Dimethylcyclopentane"
  - e. Cyclohexane
  - f. Methylcyclohexane
  - g. "Dimethylcyclohexane"
  - h. Ethylcyclohexane
  - i. Allylcyclohexane
  - j. Decahydronaphthalene
- V. Thermal Treatment of Cyclenes
  - a. Cyclohexene
  - b. 1-Methylcyclohexene-1
  - c. 1-Methylcyclohexene-3
  - d. 1-Vinylcyclohexene-3
- VI. Thermal Treatment of Benzene
- VII. Thermal Treatment of Petroleum and Its Fractions
  - a. Light naphtha, gasoline, gasoline fractions
  - b. Kerosene, kerosene fractions, solar oil, machine oil, transformer oil
  - c. Gas oil, cylinder oil, mazut, paraffin wax, crude oil
- VIII. Thermal Treatment of Natural Gas and Petroleum Distillation or Cracking Gases
- IX. Thermal Treatment of "Rubber" Polymers
  - a. Natural rubber
  - b. "Butadiene rubber" from cauprene bromide
- X. Catalytic Cracking of Aliphatic Hydrocarbons
  - a. 2-Methylbutane
  - b. *n*-Butenes
- XI. Catalytic Cracking of Cyclic Hydrocarbons
  - a. Cyclohexane
  - b. Cyclohexene
- XII. Catalytic Cracking of Hydrocarbon Mixtures
  - a. Benzine from petroleum
  - b. Benzine from pressure hydrogenation of brown coal
  - c. Gas oil
  - d. Petroleum
- XIII. Electrical Treatment
  - a. Methane
  - b. *n*-Hexane (?)
  - c. *n*-Heptane (?)

Out of the filter into a squeeze mill comes the synthetic rubber.



Dr Waldo L. Semon of Goodrich stretching one of the raw particles of the synthetic rubber, Ameripol.



Flow chart of the process.

d. *n*-Octane (?)
e. *n*-Nonane (?)
f. *n*-Decane (?)
g. Ethene
h. Ethyne
i. Ethyne containing hydrogen, or hydrogen chloride, or ethene, or ethene plus hydrogen
j. Kerosene

XIV. Isomerization
a. Butadiene-1, 2
b. Butyne-1
c. Butyne-2
d. Methylenecyclopropane
e. 1-Methylcyclopropene-1

XV. Hydrogenation
a. Butenyne
b. Butadiyne

XVI. Catalytic Dehydrogenation
a. *n*-Butane in one stage
b. *n*-Butane in two stages
c. Butene-1
d. Butene-2
e. *n*-Butenes
f. Mixtures of *n* butenes and methylbutenes obtained by dehydration of unfractionated fusel oil

XVII. Dehydrogenation by Chlorine
a. *n*-Butane
b. Butene-1
c. Butene-2
d. *n*-Butenes

XVIII. Condensation by Catalytic Removal of Hydrogen
a. Ethene

XIX. Condensation by Removal of Hydrogen as Derivatives
a. Ethene

XX. Ethenylation of Ethene
  a. Ethene and ethyne
  b. Ethene and ethene glycol
XXI. Oxidation
  a. Methane, ethane, propane, butane
  b. Ethene
  c. Butene-2
  d. Cyclohexane
  e. Cyclohexene
  f. Benzene
  g. Toluene
  h. Naphthalene
  i. Petroleum of 60-100°C. boiling range
  j. Crude petroleum
  k. Tar oils

B. Oxygen Derivatives of Hydrocarbons
I. Treatment of Alkanols
  a. Ethanol
  b. Propanol-2
  c. Butanol-1
  d. Butanol-2
  e. 3-Methylbutanol-1
  f. 2-Methylbutanol-2
II. Condensation of Ethanol with Close Derivatives
  a. Ethyne
  b. Ethanediol-1, 2
  c. Ethanal
  d. Paraldehyde
  e. 1, 1-Dibromoethane
  f. 1, 2-Dibromoethane
  g. Bromoethene
III. Oxidation of Higher Alkanols
  a. Butanol
  b. Pentanol
IV. Treatment of Alkenols
  a. Propen-1-ol-3
  b. Buten-1-ol-3
  c. Buten-1-ol-4
  d. Buten-2-ol-1
V. Dehydration of Butanediols
  a. Butanediol-1, 3
  b. Butanediol-1, 4
  c. Butanediol-2, 3
VI. Reduction of Butene-1-diol-3, 4
VII. Reduction of Butanetetrol-1, 2, 3, 4
VIII. Treatment of Cyclanols
  a. Cyclobutanol
  b. 1-Methylcyclopentanol-3
  c. "Dimethylcyclopentanol"
  d. Cyclohexanol
IX. Catalytic Cracking of Phenols
  a. Hydroxybenzene
  b. 1, 2-Dihydroxybenzene
  c. 1, 3-Dihydroxybenzene
  d. 1, 4-Dihydroxybenzene
X. Treatment of Alkanals
  a. Ethanal
  b. Butanal
  c. α-Methylpropanal
XI. Reaction of β-Hydroxybutanal with Ethanol
XII. Reduction of But-2-enal by Ethanol or Aniline
XIII. Treatment of Aliphatic Ethers
  a. Diethyl ether
  b. Ethyl vinyl ether
  c. Divinyl ether
  d. Dibut-2-enyl ether
XIV. Treatment of Aliphatic Hydroxy Ethers
  a. Ethyl α-hydroxyethyl ether
  b. γ, γ'-Dihydroxy-dibutyl ether
XV. Treatment of 1, 1-Dialkoxy Ethanes (i. e., Alkyl α-Alkoxyethyl Ethers)
  a. 1, 1-Dimethoxyethane (i. e., methyl α-methoxyethyl ether)
  b. 1, 1-Diethoxyethane (i. e., ethyl α-ethoxyethylether)
XVI. Catalysis of Cyclic Oxides
  a. 2, 3-Epoxybutane
  b. Tetrahydrofuran
  c. 4-Methyl-*m*-dioxane
XVII. Decomposition of Aliphatic Carboxylic Acids
  a. Butyric acid
  b. Isobutyric acid
  c. Isovaleric acid
  d. Pentadienoic acid
XVIII. Electrolysis of Acrylic Acid
XIX. Decomposition of 1-Acetoxybutene-2
XX. Decomposition of (Acyloxy) hydroxybutanes
  a. 1-Hydroxy-3-acetoxybutane
  b. 1-β-Oxybutyroxy-3-hydroxybutane
XXI. Decomposition of Bis(acyloxy)butanes
  a. 2, 3-Bisformoxybutane
  b. 1, 3-Bisacetoxybutane
  c. 2, 3-Bisacetoxybutane
XXII. Decomposition of Bis (acyloxy) dihydroxybutanes
  a. Bisformoxy-dihydroxybutane
XXIII. Decomposition of Ethyl α-Acetoxyethyl Ether
XXIV. Thermal Treatment of Natural Fats and Oils
  a. Technical oleic acid (olein, stearin oil)
  b. Elaidic acid
  c. Natural glycerides
  d. Woolfat (lanolin, adeps lanae)
  e. Cholesterin and its derivatives

C. Sulfur Derivatives of Hydrocarbons
I. Desulfurization of Divinyl Sulfide
II. Dehydrodesulfurization of Dibut-2-enyl Sulfide

D. Nitrogen Derivatives of Hydrocarbons
I. Decomposition of 1, 4-Diaminobutane
II. Decomposition of Piperidine

E. Halogen Derivatives of Hydrocarbons
I. Action of Chlorine on Chlorobutane
II. Catalytic Cracking of Chloromethylbutanes
  a. 2-Chloro-2-methylbutane
  b. 1-Chloro-3-methylbutane
III. Dehydrodehalogenation of Dihalobutanes
  a. 2, 3-Dibromobutane
  b. 1, 2-Dichlorobutane
  c. 1, 3-Dichlorobutane
  d. 1, 4-Dichlorobutane
  e. 2, 3-Dichlorobutane
IV. Dehalogenation of Tetrahalobutanes
  a. 1, 2, 3, 4-Tetrabromobutane
  b. 1, 2, 3, 4-Tetrachlorobutane
V. Coupling of Haloethenes
  a. Chloroethene
  b. Bromoethene
  c. Iodoethene
VI. Dehydrodehalogenation of Halobutenes
  a. Mixed 3-bromobutene-1 and 1-bromobutene-2
  b. 3-Chlorobutene-1
VII. Dehalogenation of Dihalobutenes
  a. 3, 4-Dichlorobutene-1
  b. 1, 4-Dichlorobutene-2
  c. 1, 4-Dibromobutene-2
  d. 1, 4-Diiodobutene-2
VIII. Action of Zinc plus Acetone on Butadiyne Hexabromide
IX. Dehydrodehalogenation and Decyclization of Halocyclanes
  a. Iodomethyl-cyclopropane
  b. Bromocyclobutane
X. Dehydrodechlorination of Chlorocyclohexane into Cyclohexene and Subsequent Thermal Decomposition of the latter
XI. Debromination and Decyclization of 1, 2-Dibromocyclobutane
XII. Dehydrodechlorination and Decyclization of 1-Vinylcyclohexene-3 Dihydrochloride

F. Oxygen and Sulfur Bifunctional Derivatives of Hydrocarbons
I. Decomposition of 2, 3-Butene-Bis(Ethylxanthogenic Acid)

G. Oxygen and Nitrogen Bifunctional Derivatives of Hydrocarbons
I. Dehydration and Dehydrodeamination of 3-Aminobutanol-1
II. Distillation of Trimethyl But-3-en-2-yl Ammonium Hydroxide
III. Distillation of Trimethyl Cyclobutyl Ammonium Hydroxide
IV. Distillation of 1, 4-Butene-Bis (Trialkyl Ammonium Hydroxides)
  a. 1, 4-Butene-bis (trimethyl ammonium hydroxide)
  b. 1, 4-Butene-bis (triethyl ammonium hydroxide)

H. Oxygen and Halogen Bifunctional Derivatives of Hydrocarbons
I. Dehydration and Dehydrodechlorination of Chlorobutanols
  a. 3-Chlorobutanol-1
  b. 3-Chlorobutanol-2
II. Decomposition of Ethyl Chloroethyl Ethers
  a. Ethyl α-chloroethyl ether
  b. Ethyl β-chloroethyl ether
III. Deiododealkoxylation of Alkyl α-Vinyl-β-iodoethyl Ethers
  a. Methyl α-vinyl-β-iodoethyl ether
  b. Ethyl α-vinyl-β-iodoethyl ether
  c. *n*-Propyl α-vinyl-β-iodoethyl ether
  d. Isobutyl α-vinyl-β-iodoethyl ether
IV. Dehydration and Dehydrodechlorination of γ-Chlorobutyl-γ'-Hydroxybutyl Ether
V. Decomposition of But-2-enyl Trichloracetate

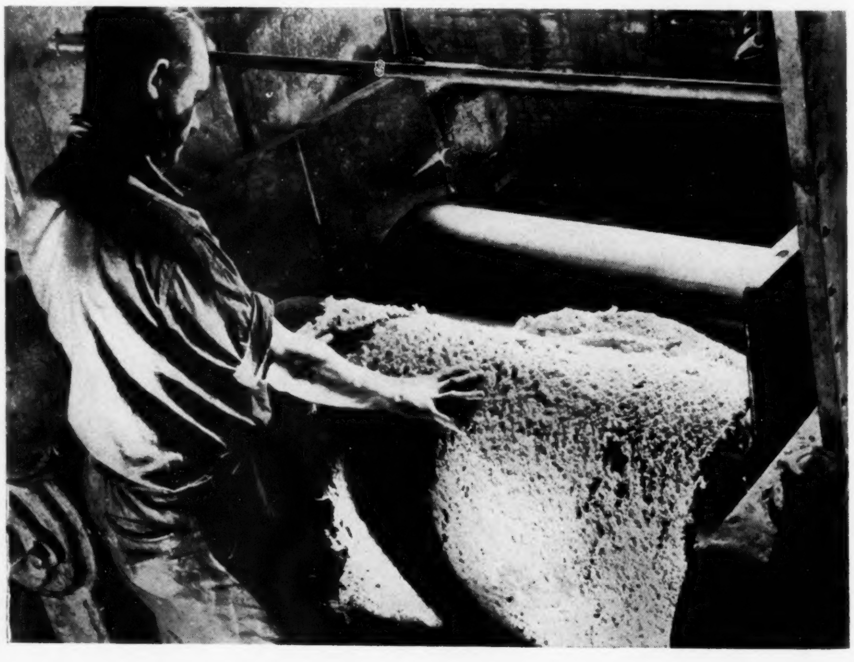
I. Nitrogen and Halogen Bifunctional Derivatives of Hydrocarbons
I. Distillation of Dimethyl But-3-en-1-yl Ammonium Chloride
II. Distillation of Trimethyl But-3-en-1-or-2-yl Ammonium Halides with Alkali
  a. Trimethyl but-3-en-1-yl ammonium iodide
  b. Trimethyl but-3-en-2-yl ammonium chloride
III. Distillation of Trialkyl 3-Halobutyl Ammonium Halides with Alkali
  a. Trimethyl 3-bromobutyl ammonium chloride
  b. Trimethyl 3-chlorobutyl ammonium chloride
  c. Dimethyl ethyl 3-bromobutyl ammonium iodide
  d. Dimethyl ethyl 3-chlorobutyl ammonium iodide
IV. Distillation of Trimethyl 1-Methyl-3-halopropyl-Ammonium Chlorides with Alkali
  a. Trimethyl 1-methyl-3-bromopropyl ammonium chloride
  b. Trimethyl 1-methyl-3-chloropropyl ammonium chloride
V. Distillation of 1, 4-Butene-Bis (Trimethyl ammonium chloride) with Alkali

J. Oxygen, Nitrogen, and Phosphorus Trifunctional Derivatives of Hydrocarbons
I. Decomposition of Cyclobutylamine Phosphate

K. Polyfunctional Derivatives of Hydrocarbons
I. Coal
  a. Low-temperature carbonization
  b. High-temperature carbonization

L. Metallic Derivatives of Hydrocarbons
I. Dissociation of Cuprous Complexes
  a. Butadiene cuprous chloride complex
  b. Butadiene cuprous bromide complex
II. Dissociation of Silver Complexes
  a. Butadiene silver nitrate complex
III. Dissociation of Mercurous Complexes
  a. Butadiene mercurous nitrate complex

Thiokol, Dow Chemical's synthetic rubber, being milled at a rubber plant preparatory to its compounding with other materials to make a finished product.



BOOKLETS & CATALOGS

Chemicals

A426. *Chemical Manufactures.* New 36-page catalog describes the chemical, physical properties, and uses of soda sulfite, hyposulfite, phosphoric acid, soda phosphates, and photographic chemicals in general. A. R. Maas Chemical Co.

A427. *Colloidal Carbons, Surface Area of.* This recent 96-page booklet is a technical summary of researches attempting the quantitative evaluation of the surface area of carbon as a clue to rubber compounding and other chemical and physical properties, using the electron microscope.

Part 1 reviews these previous methods for determining particle size: microscopy, ultramicroscopy, sedimentation, adhesion tension, diffraction, and adsorption. Then the electron microscope method is described and its results in obtaining the size and surface area of colloidal carbons. Part 2 discusses the role of surface area in rubber reinforcement in terms of rubber compounding properties, surface chemistry and behavior in rubber; colloidal properties and surface area; color, strength, and oil absorption vs. surface area; and rubber properties and surface area.

Of especial interest are the many frequency distribution particle size curves, electron photomicrographs, and technical graphs and tables. A bibliography completes the work. Columbian Carbon Company.

A428. *Enzymes, Gland Substances, and Animal Derivatives.* This new leaflet lists various products for the bulk trade. The Wilson Laboratories, Wilson & Co.

A429. *Graphite, Colloidal.* Bulletin No. 421-M describes the use of colloidal graphite as a lubricant for running-in internal combustion engines, compressors, and other mechanical equipment. Acheson Colloids Corporation.

A430. *Laboratory Equipment.* The current issue of "The Laboratory" discusses war gases as the chemists' part in civilian defense. Detailed articles also describe a new buechner filter, an anaerobic culture dish, an indicator to identify textiles, a multiple shunt for galvanometers, and a filtrator to speed up vacuum filtering. Fisher Scientific Company.

A431. *Paints, Wax-fortified.* This informative booklet describes the purposes, specifications, and uses of these paints. Attractively illustrated. S. C. Johnson & Son, Inc.

A432. *Silicate P's & Q's.* Vol. 22, No. 10 discusses informally the use of sodium silicate as a fire-retarding paint. Philadelphia Quartz Company.

A433. *Tygon.* Bulletin 1620 discusses the qualities and uses of this material. The rubber-like physical characteristics of Tygon are described but the booklet emphasizes that its chemical stability to corrosive substances more closely resembles that of chemical stoneware than any other material. Tygon formulations may be compounded to be resistant to all inorganic acids (except fuming nitric), all inorganic salts, all organic acids (except glacial acetic), alkali solutions, most of the hydrocarbons and solvents, oils, and water. It is also immune to the oxidizing effect of air and sunlight.

Included in the booklet are technical data on the resistance to various chemical agents of Tygon as contrasted with two basic plastics, using A.S.T.M. methods. The versatile physical and chemical characteristics of the Tygons are noted with photographs illustrating the widely varied applications of these properties. Tygon formulations in the fields of protective linings, insulation, tubing, fabric impregnation, and shatter-resistant glass coatings are described. The United States Stoneware Company.

A434. *Vinylite Plastics* for Wire and Cable Insulation. This new synthetic resin insulation is now substituting for rubber. The booklet reviews the practical advantages of wire and cable insulation made from Vinylite from the standpoints of installation, service, and safety. Tables indicate the physical and electrical properties, and typical applications of the compounds. Halowax Products Division, Union Carbide and Carbon Corporation.

A435. *Water Analyses, Apparatus and Chemicals for.* A 20-page illustrated booklet, supplement to the "Water Handbook", presents the various apparatus and chemicals which are used for industrial water analyses for plant control. W. H. & L. D. Betz.

Equipment — Containers

E757. *Apparatus for Testing Petroleum Products;* Catalog 700. New 96-page edition of the company's standard catalog presents detailed information on apparatus for standard methods of testing asphalt, bituminous materials, automotive and aviation fuels and lubricants, conforming to specifications of the A.S.T.M., Federal Specification Board, British Petroleum Institute, Am. Assoc. of State Highway Officials, and other governing bodies. Precision Scientific Co.

E758. *Bags.* Vol. XLI, No. 5 of "Bagology" contains the market reports on the status of cotton, paper, and burlap for bags. Chase Bag Co.

E759. *Bottling Equipment, Care of.* Wartime suggestions on the proper maintenance of bottling equipment with special emphasis on lubrication, cleanliness, removal of broken glass, and prevention of carelessness are offered in this 40-page booklet. Photographs and amusing sketches aptly illustrate the ideas it contains for better service for the duration. The Crown Cork and Seal Company.

E760. *Dehydrating Unit.* 11-page booklet describes and illustrates with photographs and drawings the equipment of a drying and concentrating

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E761. *Gas Engines.* Bulletin S-550-B20 lists the specifications and dimensions of BBG vertical four-cycle totally enclosed gas engines. Diagrams and photographs of the engines are included. Worthington Pump and Machinery Corporation.

E762. *High Vacuum Gauges* and their uses in checking a vacuum system and the efficiency of pumps are described and illustrated with specifications and prices. F. J. Stokes Machine Co.

E763. *Induction Motors.* Looseleaf sheet describes and illustrates totally enclosed induction motors for hazardous combustible-dust locations. General Electric Company.

E764. *Instruments.* Vol. 2, No. 2 of "Wheelco Comments" describes pyrometers, potentiometers, and thermometers. Also discussed are design features that permit conversion of one model to another, such as a pyrometer to a potentiometer, and the electronic principle of effecting temperature control without mechanical contact between measuring and control components of the instruments. Wheelco Instruments Co.

E765. *Machinery.* Bulletin WP-1099-B10A briefly outlines the extensive use of Worthington equipment by industry. Photographs illustrate the text. Worthington Pump and Machinery Corporation.

E766. *"Mechanical Topics"* Vol. 6, No. 1 of this illustrated publication discusses corrosion in ocean-going ships, how to recondition worn pump shafts and rods, and galvanic corrosion in sea water. The International Nickel Company, Inc.

E767. *Molding Presses.* Catalog No. 427 describes in detail and illustrates features of the semi-automatic toggle-type compression presses, single punch, and high-speed rotary performing presses for the plastics industry. F. J. Stokes Machine Co.

E768. *Operation-Time Recorders.* Bulletin A-321 presents electrical and mechanical operation-time recorders and explains the application of these instruments to the processes of various industries. The Foxboro Company.

E769. *Precision Control.* To acquaint engineers, operators and management with the manifold applications of automatic control to industrial processes, this 64-page booklet features chapters on Precision Measurement, Fundamentals of Control, Types of Controls, Control Valves, and Typical Applications. The booklet is well illustrated with photographs of control apparatus in current use and includes schematic diagrams of basic control systems.

E770. *Processing Machinery.* Designed especially to aid the processor in filling his current wartime requirements, Bulletin B6177-A contains photographic illustrations, diagrams of operating principles, and features, sizes and capacities of units which are widely applied in this field. Allis-Chalmers.

E771. *Stainless Steels in Process Industries*; Form 5201. Part 1 of this booklet discusses the selection of stainless steels for chemical process equipment and traces the metallurgical developments that have facilitated the construction of process equipment fabricated from straight chromium steels. It describes the standard nitric acid test used to determine the quality of stainless steel. Part 2 discusses solutions to fabrication problems involved in the construction of equipment from austenitic chromium-nickel and chromium-manganese stainless steels, tells the function of various alloying elements used in these steels, and illustrates in photomicrographs the effect of these elements on the structure of the steels. Electro Metallurgical Co., unit of Union Carbide & Carbon Corp.

E772. *Strapping.* The current issue of "Acme Process News" (No. 8) is devoted to the protection of war shipments in transit by strapping. Acme Steel Co.

E773. *Telemetering in Measurement of Gas Distribution Pressures*; Data Sheet No. 39. 12-page folder contains information and sketches concerning remote pressure measurement and remote automatic pressure control. The Bristol Co.

E774. *Thermocouples and Tubes.* A new 6-page bulletin, supplement to Thermocouple Data Book S2-3, recommends thermocouples and tubes that will serve in place of materials prohibited by the recent WPB Conservation Order L-134. Wheelco Instruments Company.

E775. *Thermometers, Electrical Resistance.* The sensitivity of the electrical resistance thermometer system for measurement and for control is discussed in Catalog N-33C. Its 45 pages contain photographs, schematic diagrams, and descriptions of electrical indicators, Micromax controllers and recorders, Thermohms, and other electrical measuring instruments. Leeds & Northrup Company.

E776. *Valves*; Bulletin No. 15-B. 4-Page, illustrated bulletin features heavy-duty butterfly valves which have a sufficient face-to-face dimension to permit the mounting of ball bearings for high pressure service. Advantages, applications and general operating characteristics are discussed. Tables of dimensions with raised face or ring joint flanges are included. R-S Products Corp.

E777. *Valves.* Bulletin No. 5, "How to Repair Valves," explains and illustrates the step-by-step procedure in repairing leaky gate and globe valves; also hints on how to reclaim discarded valves. The Valve World. Crane Co.

E778. *V-Belt Drives.* To expedite selection of proper V-belt equipment, Bulletin B6051-C reduces detailed engineering information to simplified charts and tables. Prices, stock sizes, dimensions, and construction details are also included in this illustrated handy booklet. Allis-Chalmers.

E779. *Water Softeners*; Bulletin W-212-B2. Folder diagrams. Hot Process water softeners. Worthington Pump and Machinery Corp.

E780. *Welding.* New 36-page publication, illustrated with photographs and simple diagrams, describes the details and applications of the Castolin Eutectic Low Temperature Welding Process, physical properties of the welds, and correction of welding faults. Eutectic Welding Alloys, Inc.

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NEW PRODUCTS AND PROCESSES

By James M. Crowe

Transparent Plastic

THE development of an entirely new transparent plastic having high abrasion resistance has been announced by the Columbia Chemical Division of the Pittsburgh Plate Glass Company.

Because of priorities and other restrictions, however, this new plastic is not yet in commercial production, and is not expected to be available for any but experimental purposes for several months.

The new plastic, called C. R. 39, is one of a group of resins resulting from many years of research activity. Its properties are such that the company claims it is in numerous ways far superior to similar products now in use. It does not dissolve in acetone, benzene, toluene, alcohol, gasoline, or any of the common solvents.

According to a company statement its resistance to abrasion is 10 to 30 times greater than other clear plastics. It retains its shape even when exposed to high atmospheric temperatures and can be formed into large sheets, either clear or laminated, by the application of extremely low pressures. In transparent sheets its strength, weight, clarity, and impact resistance are comparable with other transparent resins.

In its primary form C. R. 39 is a clear, low viscosity liquid which, in the presence of a catalyst and heat, hardens into a crystal-clear solid. Layers of fabric, paper, and the like can be impregnated with the liquid material and cured under low pressure to form sheets or shaped objects with a minimum of expense for tooling.

Since C. R. 39 is thermosetting and releases no gaseous or liquid by-products when curing, it opens up a broad new field of plastic applications. Large flat sheets and intricate three-dimensional shapes can be made with almost equal ease.

New Rosin Process

Clean and brilliant rosin, unusually free from impurities, is possible through a new producing process for which a patent (U. S. Patent 2,295,235) has just been issued to Jesse O. Reed of the U. S. Department of Agriculture. The patent has been assigned to the Secretary of Agriculture.

An essential part of the process, says an announcement by the Agricultural Research Administration, is that the crude oleoresin is made "dry" or water free by adding turpentine near the end of the normal distillation period so that the whole mass can be readily filtered through media of various types, including paper.

By driving out the water in the rosin, the inventor has found that the water-soluble impurities, along with other impurities, can be easily filtered out, with the result that the final rosin is clean and brilliant in color. The turpentine added to the rosin to drive out the water need not be distilled off to produce a solid rosin, but may be retained to form a liquid product that can be handled in the same manner as other sticky materials.

Increased Naval Store Yield

Production of naval stores from slash pine can be increased by at least 25 per cent with the use of a chemical stimulant, the U. S. Department of Agriculture's Forest Service reported recently.

For some time the Forest Service has been experimenting with acid solutions applied directly to fresh streaks on the pine trees immediately following chipping. The research work has been carried on at the Olustee Experimental Forest, 13 miles east of Lake City, Fla., where foresters found a 40 per cent solution of sulfuric acid most effective in increasing gum flow yields.

At the beginning of this year's naval stores season, a number of private operators in Florida and Georgia cooperated in tests with the sulfuric acid solution on slash pine. Their records show an average increase of 25 per cent gum flow, although about one-fourth of the operators showed increases of 40 per cent or better, and some as high as 60 per cent. These commercial tests, conducted for the purpose of increasing turpentine and rosin yield for war needs, were sponsored by the Forest Service with the cooperation of the Agricultural Adjustment Agency. The new method saves labor, say Forest Service officials, since it does not require bringing new trees into production.

Foresters tried out more than 100 possible stimulants but sulfuric acid has given the best results. They are still attempting to improve on the sulfuric acid solution by conducting tests with some 40 substances that might possibly provide greater stimulation. Experiments also are under way looking to methods that will increase gum yield from longleaf pine as well as slash, as both species are worked in the South for naval stores.

Operators who have experimented with the acid stimulant are planning to continue the treatment and additional operators have signed up to try it out next season. Meanwhile the Forest Service has already developed procedure methods in applying the chemical stimulant that may give even better results another season.

Copper Recovery

A new method for recovering copper by deplating it from iron and steel scrap has been announced by the Electroplating Division of E. I. du Pont de Nemours & Company.

Virtually 100 per cent of the copper, a vital war material is recovered in a form satisfactory for direct use in electroplating important metal parts for military equipment, the company said. Large quantities of strip steel and iron may be made available for reuse.

Formerly, removal of copper plate was costly and most of the copper was wasted. Complete deplating under the new method is carried out rapidly under controlled operating conditions. Deplating takes place without attack of the base metal, in sharp contrast to usual stripping methods.

Anhydrous Sodium Metasilicate

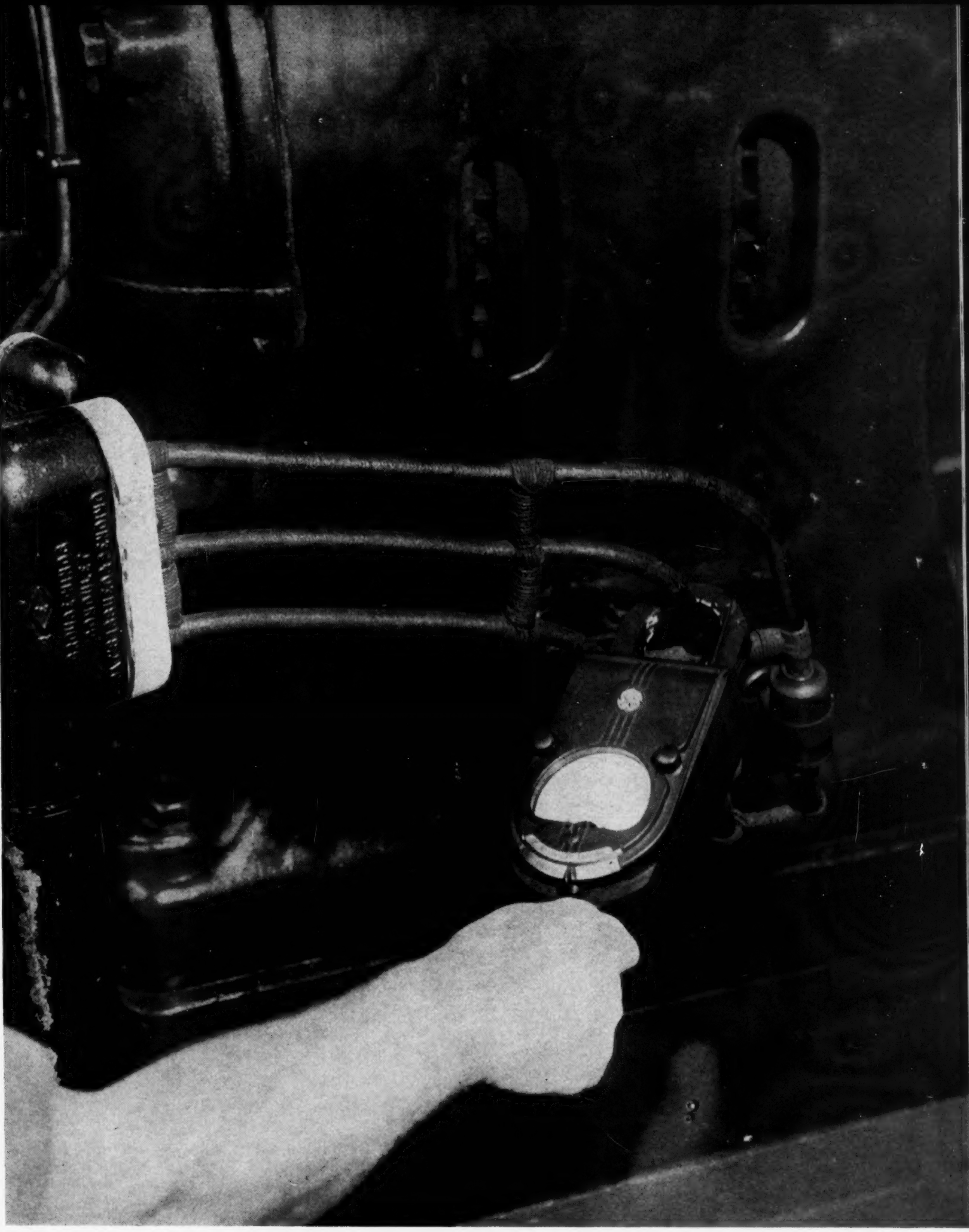
The manufacture of anhydrous sodium metasilicate has been announced by the Philadelphia Quartz Company. This product is called Metso Anhydrous, latest member of the company's line of Metso cleaners. It is a technical grade of anhydrous sodium metasilicate, Na_2SiO_3, without water of crystallization.

White and free-flowing, the anhydrous metasilicate is specially sized to reduce dustiness and to permit ready solubility. Of primary interest to fabricators of cleaning compounds for special purposes is its compatibility with soap, wetting agents, and other alkalis, such as caustic soda and phosphates of soda.

Copper and Brass Cleaner

As a result of a study of the problem of cleaning brass and copper, Nielco Laboratories have developed a new product which is claimed to improve cleaning qualities and reduce the time required. Two formulas have been developed, one for use in still tanks and one for use in washing machines and agitated tanks.

According to company tests at a concentration of four ounces per gallon at a temperature of 212°F., S. A. E. 50 lubricating oil was removed in one minute and thirty-two seconds. At a concentration of eight ounces per gallon and the same temperature the oil was removed in forty-six seconds. The panels used in the test were .032 copper and were dipped into the oil, removed and allowed to drain for three hours at room temperature. The company claims that the surface of the panels rinsed freely with cold water, leaving no film of any kind, evidenced by the fact that the rinse water on the panels formed a smooth unbroken layer, free from water break.



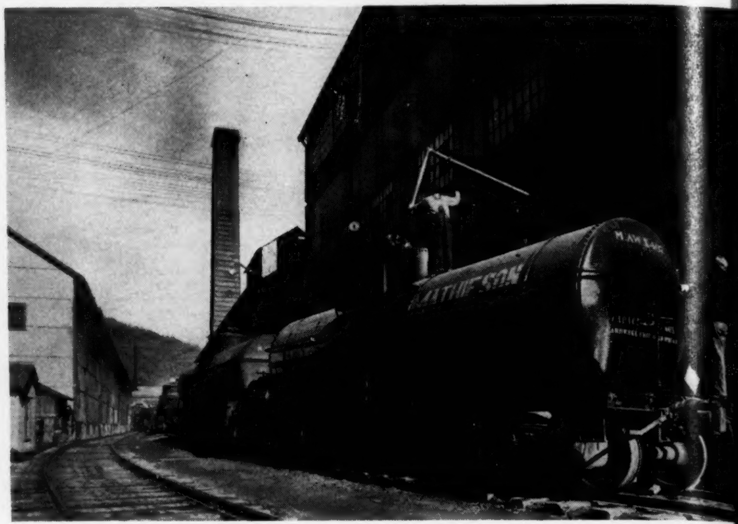
PLANT OPERATION AND MANAGEMENT

Pictured above is a General Electric hook-on volt-ammeter, type Ak-1, which is being used in a simple method for determining load on integral-horsepower induction motors. Accelerated pace of the war production program has brought forth some difficulties in overloading and underloading of motors. GE has released information recently on this simple method.

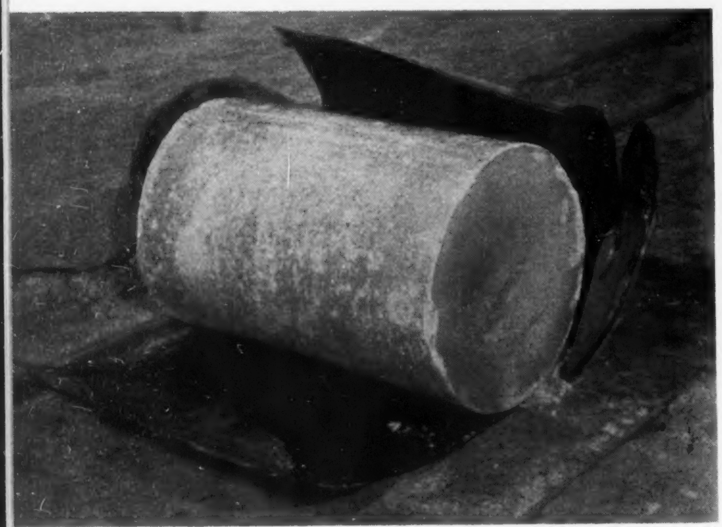
Digest of New Methods and Equipment for Chemical Makers

Proper methods of handling Caustic

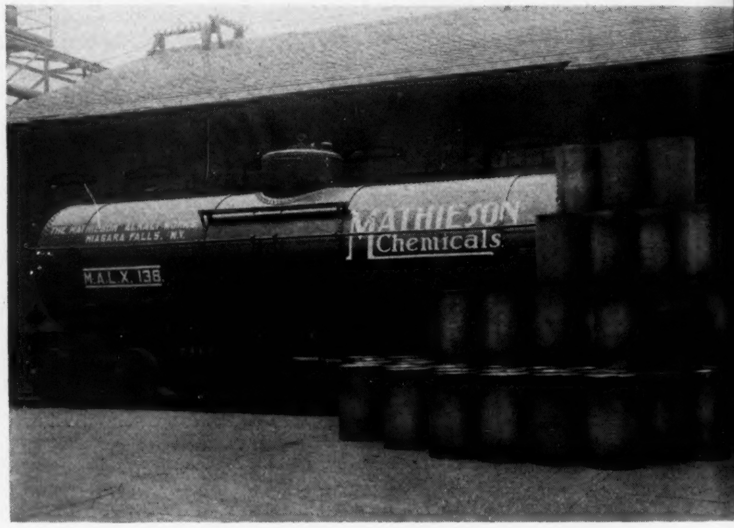
At consumer's siding, liquid caustic is withdrawn direct from the tank car to storage by gravity, pump or air.



At Mathieson's Saltville plant caustic soda comes from the process as a water solution which is concentrated and run into tank cars as above.



To get solid caustic out of the drum, heads are removed and body is then split open along the side seam.



One 8,000 gallon tank car delivers 50,000 lbs. of caustic soda in the form of 50 per cent liquid. An equivalent amount of caustic in solid form requires 72 700-lb. drums.

This is the first of a series of articles on proper handling of chemicals. While the information may seem elementary to some, CI feels that there are so many new users of chemicals that this instruction is vital. Next month's topic—Chlorine.

AT the time of the first world war all caustic soda was shipped in solid form in drums, requiring large quantities of steel and involving excessive handling costs at both the producers' and the consumers' plants.

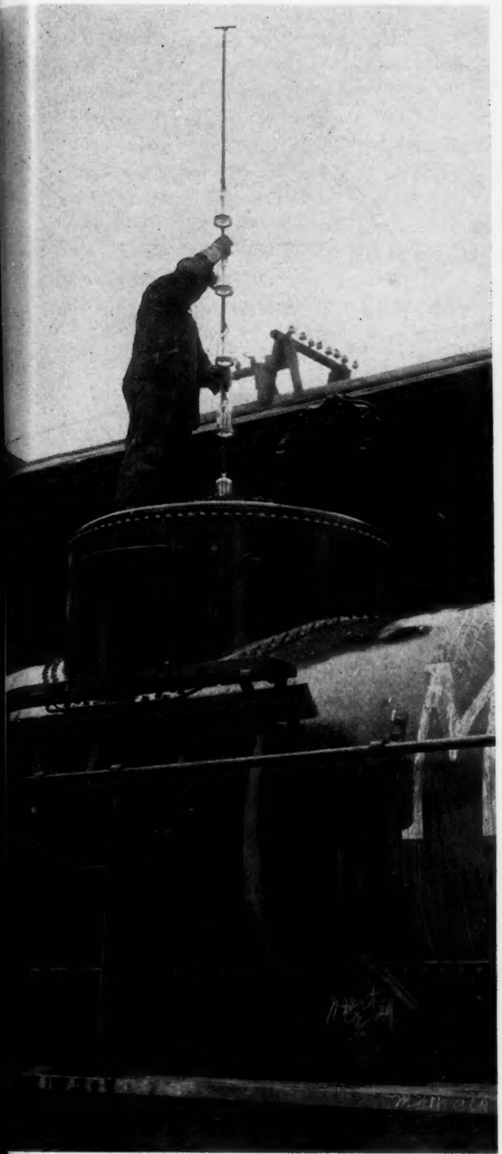
Today, most large users of caustic soda take shipments in liquid form in tank cars. This change in practice has proved to be a potent factor, during the present war, in conserving steel and labor and in facilitating transformation. As these advantages are all of vital importance today, some present users of solid caustic may find it advantageous to switch to the liquid product.

When caustic soda is shipped in the solid form, the manufacturer has to evaporate to dryness the dilute liquor produced by every caustic-making process, fuse the product, and run it into steel drums, where it cools and solidifies. The drums are then shipped to the consumer, who has to unload them, cut them open, and redissolve the huge cakes before he can use the caustic.

Up until about 20 years ago, this procedure was universal, but at that time the Mathieson Alkali Works began shipping, in tank cars, the 25% caustic liquor as taken directly from the Castner electrolytic cells at its Niagara Falls plant.

Soda

By G. P. Vincent, *Mathieson Alkali Works, Inc.*



Above left, Mathieson liquid caustic sampler is lowered to bottom of car. Operating handle lifts all stoppers simultaneously, bottles are allowed to fill and stoppers are pressed back into place. Samples may be drawn from five different levels in one operation. Above right, loading liquid caustic.

This change in practice benefited both maker and user. The maker saved time, equipment, labor, fuel, and containers, while the user also saved time and labor and got his caustic at a lower price per pound.

There was, however, one drawback: the user had to pay freight charges on 300 pounds of water with every 100 pounds of caustic he received. Where the hauls were short, this extra charge was negligible, but it made prohibitive long hauls of 25% caustic liquor.

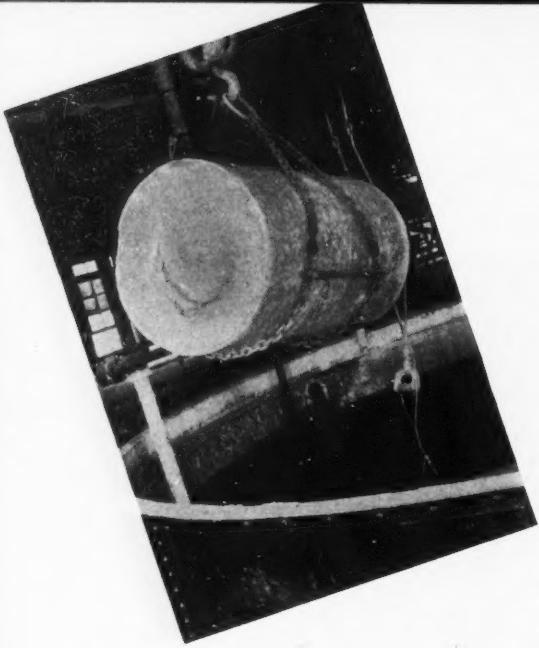
The obvious solution to this problem was to ship caustic liquors of higher concentrations, thereby keeping most of the manufacturing economies, but reducing the amount of water to be shipped and widening the area that could be served with caustic in the liquid form. By a gradual process of development, this plan was worked out on a nation-wide scale, and today liquid caustic in two standard concentrations, 50% and 73%, is being distributed from many shipping points throughout the country.

Solid vs. Liquid Caustic

The method of determining which form of caustic is the more economical to purchase under given conditions is illustrated by the following example:

Assume that the cost of caustic, as the 50% liquid, is 35c less than that of the solid product, and assume also that the freight rates, per 100 pounds, are 22c for the solid and 19c for the liquid. Then, the cost of shipping 200 pounds of the liquid (that is 100 pounds of caustic and 100 pounds of water) will be 38c, while the cost of shipping 100 pounds of the solid, plus its extra cost, will be 57c. The liquid as delivered, therefore, has an advantage of 19c per 100 pounds, or $95.00 per tank-car shipment of 50,000 pounds of solid caustic.

In addition, the cost of handling 100 pounds of liquid caustic is, on the average,



Top to bottom, lowering 700-lb. cake of solid caustic into dissolving tank. Handling drums of solid caustic. Filling solid caustic soda drums at the Saltville plant.

10c less than the cost of handling the solid. Consequently, still assuming a 3c freight-rate differential in favor of the liquid, the liquid form will have a price advantage at all freight rates under 48c, but, at higher rates, the solid form becomes cheaper. This will be seen from the following figures:

Cost of shipping 200 lbs. 50% liquid caustic @ 48c		**$0.96**
Cost of shipping 100 lbs. solid caustic @ 51c	**$0.51**	
Extra cost of solid caustic	**.35**	
Extra cost of handling solid caustic	**.10**	
Total		**$0.96**

In practice, the problem may be much more complex than the example given, but, with the aid of experts connected with the producers' organizations, a definite solution can always be obtained.

73% Liquid Caustic and 50% Liquid Caustic Compared

The chief advantage of the 73% liquid caustic as compared with the 50% liquid is, of course, that much less water is transported. This permits it to be shipped much farther economically than the less concentrated form.

On the other hand, 73% caustic solidifies at about 143.6°F., whereas 50% caustic remains liquid at temperatures above 50.9°F. This means that the 73% form cannot be stored as such but must be diluted on receipt, which involves the use of extra equipment.

Another point is of importance when the iron content of the caustic must be kept at a minimum. Fifty per cent caustic can be handled in iron equipment without danger of contamination, but, the 73% liquor must be diluted and cooled quickly in order to minimize iron pick-up.

General Requirements for Handling Liquid Caustic

Sidings.—As liquid caustic is delivered only in tank cars, the user must have a railway siding available for unloading purposes. The siding must be so located that a pipe-line, of any reasonable length, can be run from the car to the caustic storage tank.

Steam for Heating.—In cold weather, the caustic liquor in uninsulated tank cars, used for shipping 50% liquid, may solidify, partly or wholly. To permit remelting it, these cars are equipped with steam coils made of extra heavy 2-inch pipe with welded joints. Steam must be available for heating these coils and also the pipe-line from car to storage tank, in case such heating should be required.

Cars of the most recent design, used especially for shipping 73% caustic of a high degree of purity, have especial plastic linings that protect the caustic from iron contamination and are heat insulated. As the caustic is loaded at a high temperature and is protected from cooling in transit, it normally arrives in the liquid form. Only the discharge pipe needs to be heated before the car is unloaded, and it is steam jacketed for this purpose.

Should the contents of a car of this type tend to become solidified because of abnormal delays in extremely cold weather, this can be prevented by heating the car with external steam radiators in an enclosure; or the car is covered with heavy canvas or tarpaulin, and open steam is allowed to run under the cover at several points at or near the bottom.

Materials for the Construction of Caustic-Handling Equipment

Black iron is a suitable material for pipes, pumps and other equipment needed in transferring 50% liquid caustic from the tank car to the storage tank, although nickel-iron alloys, stainless steel, and, especially, pure nickel, give superior service.

Black iron is also suitable for handling 73% liquid caustic where an increase of the iron content up to 0.001% is objectionable; otherwise nickel should be used.

Materials that are seriously attacked by caustic soda solutions and should not be permitted to come into contact with them include copper, brass, bronze, silicon-iron alloys, alluminum and its alloys, hard rubber, and phenol-formaldehyde plastics. Soft rubber for linings will give reasonable service at temperatures below 100°F.

Pipe-Lines.—All lines of 1-inch size or larger used for handling liquid caustic should be made of extra heavy pipe with flange connections. Gaskets and packing should have an asbestos base.

Pipe-lines exposed to temperatures below the solidifying point of the solution carried should be so constructed that they may be drained completely after every use to prevent freezing. It is also advisable to provide connections which will permit the line to be cleaned out or heated by steam.

Long lines exposed to low temperatures should be insulated, and special attention should be given to their drainage. If it is impossible to drain such a line completely, the steam line to the car should be run directly beside it and the two should be covered together with insulation.

Storage Tanks.—Tanks used for storing shipments of liquid caustic should have capacities of from 8,000 to 20,000 gallons and should be made of flange steel, ¼-inch or thicker. They may be horizontal or vertical, but should be closed in order to prevent excessive absorption of carbon dioxide from the air. A permanently-open 2-inch vent pipe, to prevent

the collapse of the tank when the caustic is withdrawn, should be provided at the highest point in the tank.

Welded construction is preferable, but riveting may be used if the seams are absolutely tight and are calked inside and out.

In order to prevent solidification of the caustic, storage tanks should be located where the temperature is never less than 50°F. If a tank must be placed out of doors, it should be insulated and equipped with at least 40 feet of 2-inch steam coils inside, with thermostatic control to prevent wasting steam and overheating the liquid. Vent pipes on outside tanks should be so arranged that rain and foreign objects cannot enter the tank.

Each tank should be provided with the following pipe connections: pipe-line for filling, entering through the top of the tank; discharge pipe, located six inches above the bottom of the tank to allow for sedimentation; drain pipe, located at lowest point in the tank; and vent pipe.

Pumps.—Both centrifugal and reciprocating pumps are used for handling liquid caustic, and should be made of iron or nickel, as required. As caustic solutions are drastic in their action on ordinary packing materials, the packing glands of centrifugal pumps and the stuffing boxes of reciprocating pumps should be extra long.

Unloading 50% Liquid Caustic

Fifty per cent liquid caustic may be unloaded by gravity if the top of the storage tank receiving it is located at a point below the level of the bottom of the tank car. Otherwise, the liquor must be removed by pumping or by the use of air pressure, which must not exceed twenty pounds per square inch.

The accompanying diagrams (A, B, and C) make clear both the method employed and the equipment required in each case.

Unloading 73% Liquid Caustic

Unloading 73% liquid caustic is a more complicated process than unloading the 50% liquor for two reasons:

1. As has already been pointed out, 73% caustic must be diluted before storage to prevent solidification.

2. The contents of the car must be at a fairly high temperature (around 180°F.) before unloading, and this temperature will be still further increased (perhaps to over 240°F.) by the reaction between the strong solution and the dilution water. As hot caustic is corrosive to steel, the liquid must be diluted and cooled quickly to at least 104°F. if excessive iron pick-up is to be avoided.

The simplest method of diluting and cooling 73% liquid caustic prior to storage is shown by Diagram D. The caustic, flowing through an unloading line which has been previously heated by steam, meets a stream of water in a mixing chamber. The diluted liquid is then pumped through cooling coils to the storage tank.

The strength of the dilute solution is regulated by taking samples through a sampling connection and adjusting the flow of dilution water, which should be under constant pressure, until the desired dilution is secured. This flow must, however, be decreased as the head of the liquid in the car decreases. An indicating flow meter in the water line of the suction of the pump will assist in this regulation.

It is impractical to unload the car by means of compressed air with this equipment because the pressure required to force the liquor through the cooling coils and into the storage tank is greater than may be applied to the car.

All of the physical constants needed to solve the problems arising in carrying out this unloading procedure, such as the amount of dilution water required, the volume of the diluted liquor, the heat developed by dilution, the amount of heat that must be removed from the hot caustic solution to cool it to a given temperature, etc., are obtained from tables and curves supplied by the caustic producer.

Personal Protection

Liquid caustic is corrosive to the human skin, and, unlike many other corrosive chemicals, it does not give warning of its presence by an immediate stinging or burning. Hence, workers coming into contact with it may suffer serious injuries before they are aware of the danger. This seems particularly true of parts of the body covered by clothing, as neither woolen nor cotton garments nor leather shoes provide any protection to the wearer.

If caustic solutions come in contact with any part of the clothing or the skin, the clothing should be removed and both clothing and skin washed with generous amounts of water, and then treated with acetic acid or vinegar. If the solution is splashed into the eyes, they should be washed out with a 5% solution of boric acid, preferably in an eye cup. In case of serious burns or eye injuries, a physician should be consulted immediately.

Workmen engaged in handling liquid caustic should be equipped with goggles, rubber gloves, rubber boots, and rubberized aprons, and should be carefully instructed in safety methods. These precautions are especially important today in view of the existing manpower shortage.

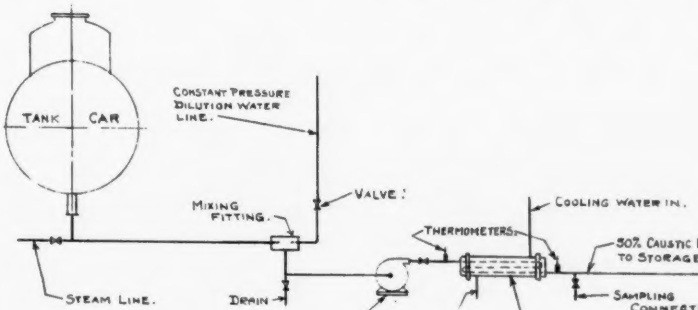
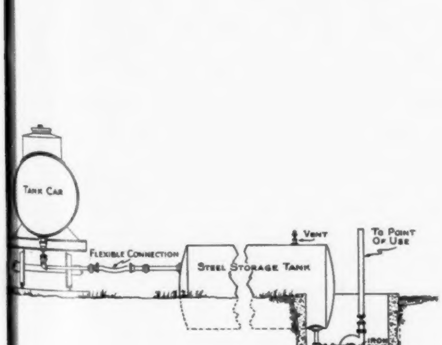
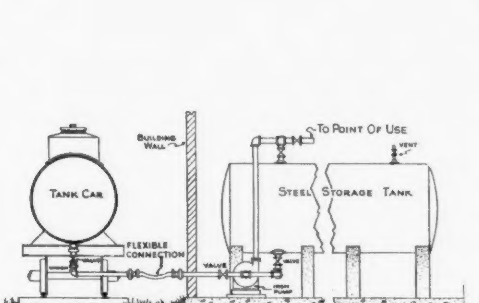


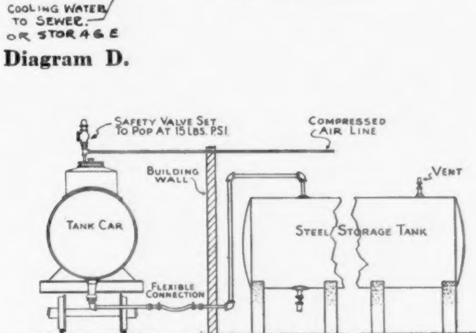
Diagram D.



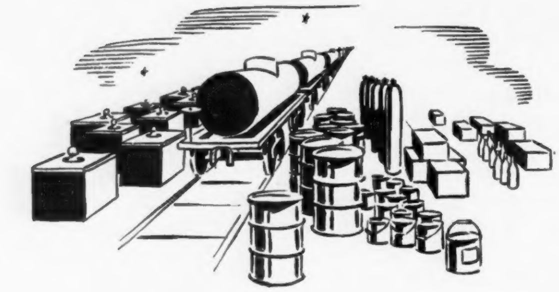
A.) Typical layout for unloading by gravity.



B.) Typical layout for unloading by pump.



C.) Typical layout for unloading by air pressure.



PACKAGING & CONTAINER FORUM

By Richard W. Lahey

I. C. C. Proposes Changes In Regulations

ON Sept. 16 I. C. C. published proposed amendments to the Regulations. Any one who desired to comment on these proposals was to communicate in writing with the I. C. C. within 20 days after date of publication. Commission then considered suggested changes. Those of interest to the chemical industry are as follows:

(1) *Hydrochloric acid, anhydrous,* added to the dangerous commodity list as a non inflammable gas and will be packaged in cylinders.

(2) *Sec.* 65 (*j*) (2) *Smokeless Powder.* Fiber containers holding not more than one pound each is added to the (presently authorized) metal cans to be packed not over 10 one pound containers to a wooden box Spec. 15C.

(3) *Sec.* 110 (*b*) (3) *Inflammable Liquids flashing between* 20°*F. and* 80°*F.* It is proposed to delete from the list of approved containers the Spec. 5B metal drums. These containers are returnable and contain expanded rolling hoops.

(4) *Sec.* 113 (*f*) (1) *Paint, Varnish, Lacquer, etc., flashing between* 20°*F. and* 80°*F.* It is proposed to add to the list of exempt small containers, fiberboard cans with metal heads of 1 gallon maximum capacity. These cans must be packed in strong outside shipping containers. This proposal is to last for the present emergency only.

(5) *Sec.* 114 (*d*) *Liquid polishes for metal, stoves, furniture and wood*—are exempt when packed in glass or earthenware containers of not over 1 quart capacity or metal containers of not over 5 gallon capacity each, packed in strong outside containers are exempt from packaging and labeling requirements. It is now proposed that they be exempt from marking requirements when shipped by rail or by highway. They are also to be exempt from marking requirements when shipped by water except as to name of contents and labeling requirements.

(6) *Sec.* 183—*Exemptions for inorganic nitrates such as aluminum and ammonium nitrates, etc.*—are covered in this section. The proposals add fiber drums to the exempt containers. It also increases to 200 lbs. the quantity of ammonium and guanidine nitrate which can be packed in bags and still remain exempt from the Regulations.

(7) *Sec.* 204 (*e*) *Sodium hydrosulfite.* For the duration of the emergency the Specification 21A fiber drums may be used without inside containers consisting of metal drums.

(8) *Sec.* 253 (*c*) *Chloracetyl chloride.* For the duration of the emergency the I. C. C. 1A or 1C carboys in boxes or kegs are to be added to the approved list of containers.

(9) *Sec.* 264 (*h*) (3) *Hydrofluoric Acid*—14 gauge I. C. C. 5A 55 gallon maximum capacity drums are proposed for less carload shipments provided prescribed test requirements are maintained. The present regulation specifies that 12 gauge drums must be used in sizes 20 to 55 gallons.

(10) *Spec.* 1*A*—*Carboys.* It is proposed that minimum thickness of lumber in carboy box sides and tops be reduced from 25/32" to 1/2". Tops are to be reinforced with 2 one half inch cleats 4 inches wide. The bottom of the box is to be nailed to 4 nailing cleats which are 25/32" minimum thickness and 2½" wide. These nailing cleats are to form the bottom boards on each of the 4 sides of the box. Corner posts are to have a minimum of 2½" sides.

(11) *Spec.* 4*B* (9) (*a*) *Cylinders.* The minimum wall thickness of cylinders over 5" outside diameter is to be reduced from 0.100 ins. to 0.090 ins.

(12) *Spec.* 6*B. Returnable metal drums.* The rolling hoops of the 5 to 30 gallon size of 16 gauge metal required are "I" bar or "U" type. This change authorizes expanded, swedged, or rolled hoops.

(13) *Spec.* 12*B. Fiberboard Boxes.* A special box authorized only for packing poisonous solids class B in 1 gallon metal cans authorized gross weight 84 lbs., is to be added to this Specification. This box must comply with Spec. 12B except that it must be of the one piece type, double wall corrugated fiberboard with minimum 400 lb. test and all 3 facings having minimum 135 lb. test.

(14) *Spec.* 21*A*—*Fiber Drums.* Because of the present emergency the specified linderman joints glued for wooden heads is to be broadened to include wooden heads formed from glue butt jointed lumber.

New Drum Restrictions

New steel drum containers and parts in the hands of manufacturers were put under complete allocation control by the Director General for Operations.

Purpose of the action is to channel delivery of new steel drums to supply the most essential requirements of the production program.

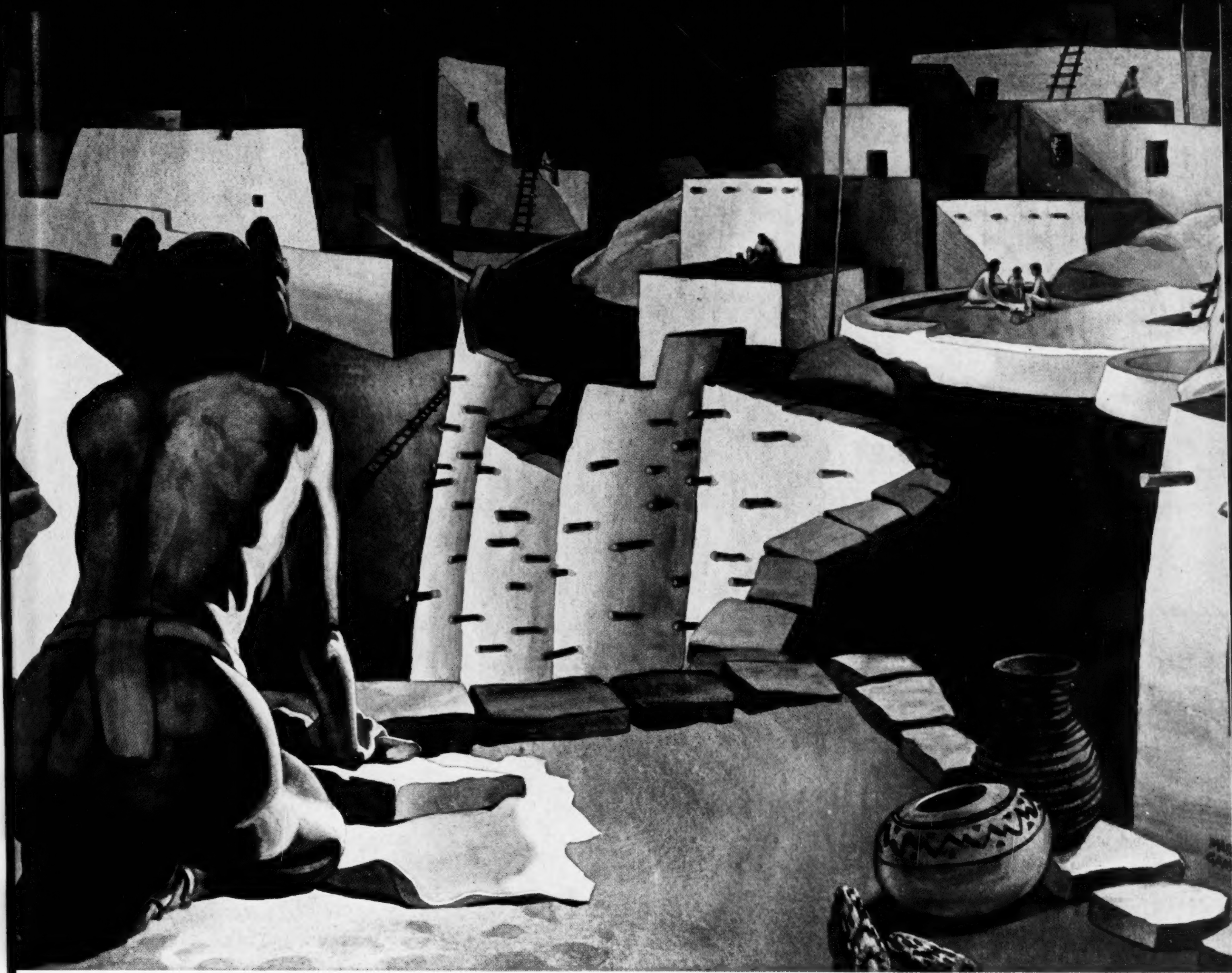
Sheet steel allotted for the manufacture of steel drums has been found insufficient to satisfy all outstanding orders rated AA-1 or higher, making it necessary to exercise tighter control over sale and delivery of the containers.

The order, M-255, prohibits manufacturers from selling or delivering new steel drums and parts (excepting flanges, plugs and cap seals) after November 16, without specific authorization of the Director General for Operations. Likewise, persons manufacturing drums for their own use are prohibited from using any drums which were not completely manufactured before November 16, unless they have similar authorization.

Authorization must be applied for by addressing a letter in duplicate to the Containers Branch, War Production Board, Washington, D. C., marked Ref: M-255. The letter should have a copy of the purchase order attached and should state what the drums are to be used for, what products are to be shipped in them, where they are to be shipped, and the use to which their contents are to be put.

Steel drum containers, used for packing such products as oil and gasoline, are essential for shipment of supplies to the armed forces and for other purposes connected with the war program.

An earlier order, L-197, established restrictions over the use of both new and second-hand drums, and listed products which could not be packed in steel drums. This action prohibits the use



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of new drums for packing permitted products without authorization.

Make Them Last Longer

Hercules recently issued instructions to their customers regarding the proper spigots to be used for emptying drums. This data is reproduced for the reader's guidance.

Excessive force used to insert faucets with tapered threads often unseat the pressed in drum flanges, causing leakage. This results in scrapping the drum because it is almost impossible to repair

damage of this type. Another bad feature of the tapered thread spigots is to distort the threads and sometimes they are stripped.

The straight thread faucet illustrated will not cause this type of damage because the bearing surface is at the collar of the flange and not in the threads themselves. Manufacturing Chemists Association has a standard faucet which was adopted in 1939 as illustrated in Manual D-32.

To Promote Substitutes

Organization of several technical committees in the containers industry to assist in the development of substitutes for tin, steel and other critical materials used in the industry was announced recently by William W. Fitzhugh, Deputy Chief of the Containers Branch.

The committees, set up voluntarily by the industry, have offered their assistance to the Containers Branch in solving difficult problems surrounding the development and use of substitute materials. This is in line with the recent statement of the Branch pointing out that substitutes should be developed immediately to avoid a serious problem in packing foods and other products.

Mr. Fitzhugh said that if packers would submit their problems to the Branch, together with a description of what efforts had been made to develop substitutes, the data would be forwarded to the proper committee with a request for practical assistance in perfecting a substitute container.

On Maximum Loading

The Office of Defense Transportation issued on Oct. 29th the following questions and answers relating to General Order ODT No. 18, Revised:

Q. What is the principal requirement of General Order ODT No. 18, Revised?

A. It prohibits carriers with certain exceptions from accepting for transportation any cars containing civilian freight shipments which are not loaded either to the marked weight capacity of the car or to the full visible capacity.

Q. When does the order become effective?

A. On November 1.

Q. What does the order define as "weight capacity" of a car?

A. The capacity in pounds stenciled on the side of the car or shown under the heading "Capacity" in the Official Railway Equipment Register.

Q. Does this mean the same as "load limit" of the car?

A. No. The "load limit," usually also stenciled on the side of a car usually runs considerably higher than the "weight capacity."

Q. Do the maximum load requirements of Order 18, Revised, apply to shipments loaded on flat cars or in tank cars?

A. No. Flat cars and tank cars are exempted from the order's provisions.

Q. Does maximum loading under this order apply to less-than-carload freight?

A. No. All 1-c-1 shipments are covered in General Order ODT No. 1.

Q. May a shipment be loaded in excess of the marked weight capacity of the car?

A. The revised order provides for loading with "a quantity of freight which equals or exceeds in weight the marked capacity in pounds."

Q. What is considered loading to the "full visible capacity" of a car?

A. Loading which utilizes all the practicable stowage space in the car.

Q. Is there any provision for the loading of such freight as might be damaged if the maximum loading requirements are applied?

A. The order specifically states that nothing in its provisions shall be construed as requiring that cars shall be loaded to such an extent or in such a manner as to create a transportation hazard, cause damage to the lading or injury to persons engaged in loading or unloading such cars, or that cars used for freight requiring refrigeration, heat or ventilation be loaded beyond the heating, refrigerating or ventilating capacity of the cars.

Q. Is it the responsibility of the shipper or the carrier to determine whether capacity loading will result in a transportation hazard damage to the lading or injury to persons?

A. The shipper is charged, under the order, with the responsibility of certifying on the bill of lading the exceptions or the permit covering any failure to load to capacity. The carrier is primarily responsible for determining whether the loading requirements have been met by a shipper. Controversies between carriers and shippers with respect to this phase of the order may be referred to the Office of Defense Transportation for determination.

Q. Are certificates and permits covering shipments subject to investigation?

A. They are, and appropriate action will be taken by ODT where willful violations of the loading requirements occur.

Q. In determining maximum loading which can be accomplished without damage to lading, how can the rule be applied with uniformity to avoid discrimination and competitive disadvantages?

A. The War Production Board's Division of Stockpiling and Transportation is cooperating with ODT in correlating the practice of shippers with respect to safe practicable loading of commodities susceptible to damage by capacity loading. The WPB recommendations will be reviewed by ODT and where these recommendations are consistent with the spirit of Order No. 18, Revised, they may be published as special directions fixing uniform standards for the loading of various commodities.

Q. If a shipper orders a car of particular capacity, and the carrier furnishes a larger car, must the shipper load to the larger car's capacity?

A. Yes, unless a special permit is used.

Q. How may such a permit be obtained quickly in the event the shipper finds it impossible to load to the larger capacity?

A. The order permits the chief operating officer or the division superintendent of the initial carrier to issue such permit in cases where unusual circumstances warrant such action.

Q. How is the order to apply on shipments loaded at points not equipped with scales, and found to be "light" at the scale station?

A. Movement from the loading station by the carrier constitutes "acceptance," and such car should not ordinarily be held at the scaling station or returned to the shipper for completion of the load.

Q. Will the loading of commodities to the minimum weights required by the tariff to obtain carload rates be con-

sidered as meeting the requirements of the order?

A. No.

Q. In cases where consignees are limited by Government regulation as to the amount of inventory they may carry in stock, will such restrictions bring shipments of materials to these consignees under the order's exemptions?

A. Yes, but appeals should be made to the Government agency responsible for the restrictions for such modifications as will permit compliance with the order.

Q. Do the order's provisions apply to a shipment originating at a point in Canada?

A. No. But capacity loading must be observed on shipments originating in the United States and destined to Canadian points.

Q. Are any provisions made in the order for consolidation of shipments?

A. Yes. It is possible for not more than three shippers to unite in loading two or more cars with the same different commodities in order to make up the maximum load. These cars may be consigned to not more than three consignees at from one to three destinations, in the direct line of movement.

Q. In the event such consolidated shipments are loaded or unloaded on a switching road who assumes the switching charge?

A. This must be determined by the applicable tariff provisions.

Q. Is it permissible for a carrier to accept a partially loaded car from a shipper and then fill out the load with 1-c-1 cargo to break bulk at the destination of the carload shipment?

A. No, unless a special permit is issued by ODT to cover such move.

Q. Shall the shipper or the rail carrier apply to ODT for special or general permits?

A. The shipper must apply, giving full details as to why the provisions of the order cannot be complied with. The permit, if issued, is mailed to the shipper but is directed to the railroad. If the carrier is the shipper, the carrier must make the application.

Q. Where two or more cars are used in transporting a single consignment of freight moving all-rail is it necessary that each car be loaded to the extent provided by the order?

A. Yes, unless a special permit has been issued to cover the movement.

Q. Will the fact that certain commodities are marketed and distributed on the basis of trade units developed over a long period of time justify exceptions to the loading requirements of the order?

A. No. It is expected that there must be considerable readjustment in marketing practices which will cause inconvenience, extra expense and even some hardship, but these factors must necessarily be subordinated in the interest of the accomplishment of the essential objective of the order.

Q. What are the general exceptions to the order?

A. The general exceptions are:

(a) Freight shipped by or consigned to the Army, Navy, Coast Guard or Marine Corps; freight consisting principally of airplanes, armaments, guns and military vehicles including tanks and processed parts thereof, and marine equipment consigned to the Maritime Commission or the War Shipping Administration;

(b) Tariff minimum carload shipments of commodities which have been allocated or limited by a regulation of any Government agency in such quantity as to preclude shipment of an amount sufficient to meet the maximum loading requirements;

(c) Shipments of explosives;

(d) Freight moving in accordance with "clean out" or "remnant rules," or "gathering rates and rules" in applicable tariffs;

(e) Carload freight moving to intermediate points between origin and destination for consolidation of shipments or for stopping in transit to complete loading or for partial unloading;

(f) Freight loaded into cars which cannot be interchanged;

(g) Freight to be unloaded at points on railroads in Cuba;

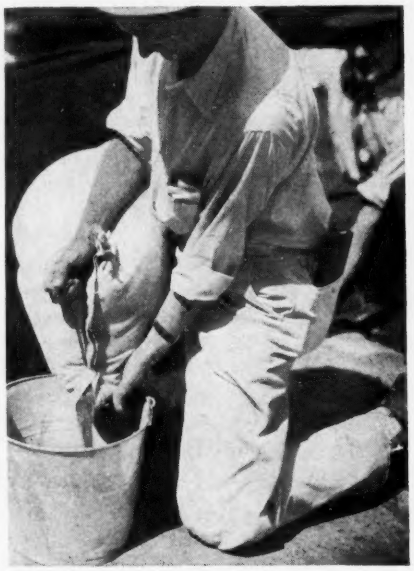
(h) Livestock and other shipments of live animals or poultry;

(i) Cotton or cotton linters in bales;

(j) Material and equipment loaded by a carrier to be moved over its own lines only;

(k) Carload shipments when authorized by or made in accordance with any special permit issued by the chief operating officer or division superintendent of the initial carrier where because of unusual circumstances such officer believes compliance with the order would result in inefficient use of cars or motive power or where such permit is required for reasons of military necessity.

New Bemis Rip-Cord Closure



Partial opening of a Rip-Cord closure makes a handy pouring spout for users who need only part of the bag's contents or to pour into small openings.

The Bemis Rip-Cord closure for textile bags is easy to apply and opens instant-method. Bags are not damaged in opening the Rip-Cord.

The Bemis Rip-Cord Closure is a new method of closing cotton and burlap bags which provides a simple, quick means of opening them without injury. The Rip-Cord is sewn into the closure of the bag with a regular two thread bag closing machine. Minor inexpensive adjustments are necessary to adapt the machine to sewing the Rip-Cord. A quick jerk of the Rip-Cord opens the bag. The bag is not torn or damaged and saves time.

It is claimed the bags are more compact and economize warehouse storage space as well as using less space on barrel trucks.

Where a bag user has been closing his bags with wire ties, the Rip-Cord Closure permits to use bags two inches smaller, thus providing an economy in bag costs.

By pulling the Rip-Cord part way across the bag, the Bemis Rip-Cord Closure provides a useful pouring spout where only a part of the contents of the bag is to be removed at a time.

(*Continued on page* 757)

Checking and greasing wheel bearing of model M-3 37 mm. anti-tank gun—Photo by U. S. ARMY SIGNAL CORPS

WHEN our Army's anti-tank artillery goes into action . . . there may be a Crown Pail right on the firing line.

For the lubricating grease that keeps the wheels rolling smoothly . . . and protects the recoil mechanism . . . is often shipped in sturdily constructed Crown Pails for use in the field.

That's one more example of the way the Crown Can organization is doing its full part in the war effort . . . a part that includes everything from the manufacture of gas mask canisters and airplane cowling to the production of the more familiar cans which protect and preserve the food needed on the battlefront and the home front!

CROWN CAN COMPANY, PHILADELPHIA, PA.
Division of Crown Cork and Seal Company

CROWN CAN

PLANT OPERATIONS NOTEBOOK

Switchgear Equipment Transactions are Streamlined

By E. H. Beckert
Switchgear Division, General Electric Company

Proposal routine and ordering routine, real time consumers in negotiations for plant equipment, have been effectively speeded up in many transactions for switchgear. Depending on the type of equipment and the conditions involved, savings up to 50 per cent are being made in the purchaser's and the manufacturer's time previously required to decide on the switchgear needed for a job, order it, and get it into production.

Two factors are responsible for the saving. Factor number one is standardization of equipment, already accomplished by leading switchgear manufacturers. Without it the scheme would be unworkable. Factor number two is a double-barreled one—(1) the use of a one-line diagram by purchaser in his request (Fig. 1) and (2) the use of a combined one-line diagram and perspective outline picture of the equipment by the manufacturer in his proposal (Fig. 2).

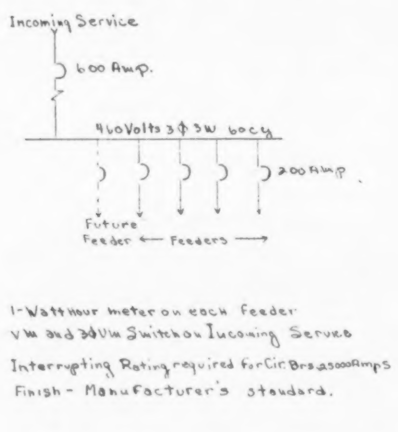


FIG. 1
CUSTOMER'S REQUEST DIAGRAM

This method short cuts the preparation of detailed specifications by both purchaser and manufacturer and, as well, eliminates much of the proposal routine preliminary to the actual placing of the business and often a great deal of correspondence after the order is received.

A typical case will illustrate how the new method works.

The XYZ Manufacturing Company plans to erect a small plant and needs switchgear to control and protect the distribution system. To begin with, the engineer on the job, of course, knows the total amount of power required and he must select the system of distribution he desires to use and the distribution voltage; he must know how his load centers are located and the capacity of the feeders required for each of these centers.

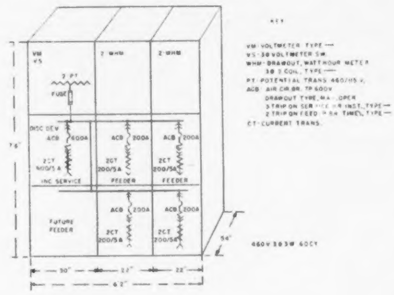


FIG. 2
MANUFACTURER'S PROPOSAL DIAGRAM

In the simple case chosen it is assumed that the size of the plant is such that the engineer decides to distribute power at low voltage with the stepdown transformers located outside the plant. He wishes to control the incoming service and four feeders to load centers with space on the switchgear control board for a possible future feeder. (The one-line diagram scheme could be applied equally well had he decided to distribute at high voltage with stepdown transformers at load centers, using the unit substation system.)

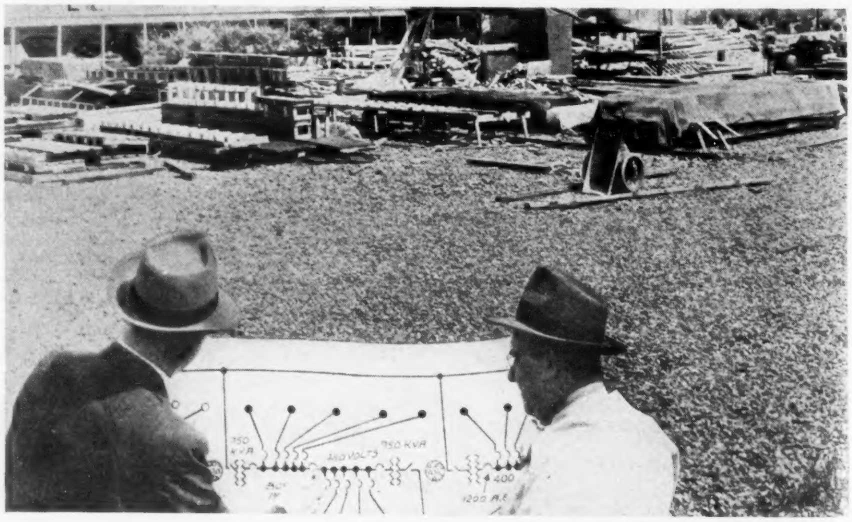
Having made these decisions it takes the engineer a very short time to make up a simple one-line diagram (Fig. 1). This diagram contains data as indicated and is accompanied by very brief general specifications stating essential information applying to the specific conditions of the purchaser's installation. This constitutes his specifications and request for a proposal.

The manufacturer readily determines the standard equipment applicable and prepares his bid. This consists of (1) a letter quoting prices and estimated shipping date; (2) a drawing (Fig. 2) which is a dimensioned perspective outline of the equipment containing a one-line diagram showing the connections of each unit with a keyed list of each unit's equipment; (3) a set of stock descriptive sheets that describe details of the equipment offered; and (4) a set of brief specifications containing only such general essential data as machine and circuit capacities, general reference to descriptive sheets, and a limited amount of other data not easily covered on the drawing.

XYZ Manufacturing Company then places its order in a form as simple as: "One Switchgear Equipment in accordance with Proposal No. so-and-so."

In completing the order, of course, the manufacturer provides the usual drawings including front view and complete wiring diagram for operating purposes. But their preparation is coincident with the manufacture of the equipment, and not a part of the negotiations.

The point may be raised, "Doesn't the one line diagram method mean that the purchaser is putting himself pretty much in the hands of the manufacturer?" The answer could be "yes," but it should be "no." "Yes," because this method places a larger share of responsibility on the manufacturer and takes for granted the suitability of his standard equipments. "No," because, after all, no real details are left open since standard equipments are furnished and these are very definitely described in the diagram and in the stock construction sheets submitted with the proposal. All manufacturers on a transaction of this kind will take pride in safeguarding the customer's interests and in furnishing equipments that will fulfill all requirements.



CHEMICAL SPECIALTIES

Miller Mfg Co., Camden, N. J., recently switched from metal containers to bottles and we don't have to tell you what prompted the move. This is the 16-ounce Anchor Hocking amber bottle used. Former metal container is in background. Change is popular.

Industrial Agricultural Household

Rug and Upholstery Cleaners

The market for rug and upholstery cleaners has been well developed -- the problem now is to produce them under the handicap of upset conditions. Here's an article which tells you just about everything you might want to know about formulation, production and even sales.

Another in a series by C. T. Small, Ph. D.

THE cleaning of rugs and of upholstery presents pretty much the same problem. Frequent use of a vacuum cleaner, although efficient in its way, does not keep the surface of these materials clean. In time both rugs and upholstery fabrics lose their original fresh appearance—Oriental rugs in particular lose their luster and brightness of color to which they owe in part their quality of richness. This is because an oily film of soil adheres to the exposed part of the fabric material, giving it an appearance of being generally smudged over. Such soil shows up, for example, when one has to clean a spot where something has been spilled.

With upholstered furniture the chief headache comes from the stained areas left when people rest their heads against the back of a chair or sofa. Enough of the natural hair oil is rubbed off in time to leave a fairly large and noticeable dark spot. Trying to clean such a smudge is just as hopeless as trying to clean a much smaller grease spot—once started the whole piece needs to be gone over. Housewives sometimes avoid this by draping small tidies on the backs of their chairs. The name, Macassar oil, which was long a popular hair oil, explains how these tidies came to be called "antimacassars."

Most of the present-day cleaners sold to meet this particular need are water-soluble detergents, either already in solution or in dry form to be dissolved in water. The majority are based on soap with varying amounts of other ingredients. A type greatly favored is a strongly foaming cleaner, the directions accompanying this being to work up a lather and to use this to rub over the fabric. The intent behind this is to get the user to apply the solution in such a way as not to get the material being cleaned overwet. If too much water is allowed to soak in, the fabric, particularly if wool, may shrink; the drying process may take so long that mold starts to form in the stuffing; wooden frames may swell and be distorted. These objections perhaps do not apply to the same extent to rugs, but even with them it is better that they not be soaked so thoroughly that they won't dry out in a few hours. Nearly all rugs contain sizing which it is desirable to retain and which might be partially or wholly removed by too severe soap-and-water washing. Also jute, a fiber sensitive to water, serves as backing on many domestic rugs.

The question may arise as to whether rugs, upholstered furniture and automobile upholstery can really be cleaned by the relatively light methods recommended. The answer is that they can be enormously improved in appearance. Much of the dirt can be removed by the sponge or cloth used to apply the cleaner solution, while some part of the dirt is undoubtedly carried through to the material just beneath the surface fibers. The practical result is usually considered satisfactory.

The following are examples of typical liquid products containing soap.

1.	Potash coconut-oil soap	4%
	Water	96
	Small amount of pink dye	
2.	Potash stearate soap	0.6%
	Potash coconut-oil soap	0.6
	Trisodium phosphate	0.6
	Aqua ammonia 26°Be.	0.5
	Water	97.7
3.	Potash coconut-oil soap	14.4%
	Sodium silicate pentahydrate	2.5
	Aqua ammonia 26°Be.	2.
	Water	81.1
4.	Potash oleate soap	12.5%
	Sodium metaphosphate	1.5
	Sodium thiosulfate	0.1
	Pine oil	10.5
	Water	75.4

Although some of these products are described as not harmful to fabrics which water won't injure, many of them contain alkalies which are naturally more drastic than water alone. However, as used in relatively dilute solution, they should do no harm where water does none. Formula No. 1 gives a 4 per cent liquid soap

solution to be diluted with 3 parts of water. This results in cleaning with a 1 per cent soap solution, which is an excellent detergent. Concentrations of soap up to 2 per cent should do no harm and should give quick cleaning. Directions are to apply the diluted solution with a soft- or medium-bristle brush, depending on the type of fabric. It goes without saying that any material to be "shampooed" should first be made as clean as possible by mechanical methods such as brushing, or by use of a vacuum cleaner.

In Formula No. 2 the soap is built or made more efficient by the presence of the alkaline salt, trisodium phosphate. This cleaner is used without dilution, a foam being first produced with a sponge, and applied as such. Directions call for the use of a fresh damp towel after cleaning to take off any excess of detergent. A small amount of ammonia is often present in these solutions as it seems to brighten some colors, as well as being an aid to the cleaning action.

No. 3 More Concentrated

Formula No. 3 is for a more concentrated soap solution to be diluted in the proportion of one-half cup to 8 cups of water. This gives slightly less than a one per cent soap solution, with sodium silicate as a builder, plus ammonia. The silicate is presumably metasilicate, which is fairly alkaline and an excellent soap builder. Again the lather from the product is emphasized as the proper agent for doing the cleaning.

In Formula 4 we have a product intended for heavy-duty cleaning as of soiled automobile upholstery and canvas tops. Used without dilution, the product is brushed or rubbed onto the soiled surface, then wiped off. This concentration of pine oil should have a disinfectant action, as does soap solution itself to a mild degree. Pine oil also provides the type of odor often associated with cleaning agents. Sodium thiosulfate, a mild reducing agent, would seem to have no particular value here. This high concentration of oleate soap naturally has marked detergent power. Sodium metaphosphate differs from the usual alkaline soap builders, trisodium phosphate and sodium silicate already mentioned. It is a particularly good water softener and serves this purpose in many products where soap is to be used in hard water. The metaphosphate reacts in hard water to form soluble calcium and magnesium compounds, thus preventing curd formation with loss of soap. Thisodium phosphate and sodium silicate also have water-softening action, but by the formation of insoluble precipitates with "hardness" in the water.

A household cleaning liquid formula recommended for "rugs, upholstery, woodwork, refrigerators, mirrors—and glass," contains approximately 1 per cent of trisodium phosphate and 0.1 per cent of commercial sodium metasilicate. This seems much more suitable for use on woodwork, mirrors, etc., than on fabric materials. Its content of alkaline salts only, would certainly be much less efficient than if it contained soap for cleaning cotton or woolen goods. However, such a composition does make a good cleaner for paint, mirrors, and the like.

Liquids Containing Solvents

Some of the liquid products contain a small proportion of organic solvents in addition to soap. The purpose of the organic liquid is to exert a direct solvent action on the oily matter in the soil, both saponifiable and unsaponifiable oils probably being present. Examples of such products are the following.

1.	Potash coconut-oil soap	13.5%
	Ethyl ether	1.0
	Water	85.5
	Fluorescein	trace
	Perfume	trace
2.	Triethanolamine oleate soap	4.5%
	Ethylene dichloride	1.0
	Isopropyl alcohol	5.5
	Water	89.0
3.	Potash coconut-oil soap	0.8%
	Ethyl ether	1.0
	Aqua ammonia 26°Be	1.0
	Saponin	0.2
	Water	97.0
4.	Soda tallow soap	2.0%
	Sodium metasilicate	0.5
	Borax	1.8
	Aqua ammonia 26°Be	0.5
	Ethyl ether	1.5
	Water	93.7

In Formula No. 1, the liquid is to be diluted in the ratio of 1 part to 16 parts of water, thus giving a final solution containing slightly less than 1 per cent of soap. The ether present is probably lost on dilution by volatilization, since ethyl ether is highly volatile. Its odor might be noticeable, but in the final concentration used its ability to dissolve fat should be nil. A trace of fluorescein gives the liquid a green-yellow fluorescence, an effect popular in liquid hair shampoos. Water-soluble dyes are frequently present in very small amounts in these liquids to give them greater eye appeal. The quantity present is so small that on dilution it will not be apparent after application to fabric materials. Perfume such as oil of cedar or oil of lavender is sometimes added to these products. Those containing ammonia are apt to carry the predominant odor of that ingredient.

In Formula No. 2, a more expensive soap is present, since triethanolamine costs about three times as much per pound as caustic potash, which in turn costs more than twice as much as caustic soda. Also nearly three times as much triethanolamine is required to neutralize a given weight of fatty acid as of caustic potash, and nearly four times as much triethanolamine as of caustic soda. Triethanolamine soap is more nearly neutral in solution than the other soaps, but this is of no great significance here. True, strong alkali does attack wool, but in the concentrations and under the conditions used, the products described previously should have no harmful effect on it. Even the more alkaline products containing soap builders are not what would be considered strongly alkaline as used. Ethylene dichloride is a fat solvent and should help loosen the soil when used in a concentration of one per cent. The alcohol helps dissolve the ethylene dichloride, which is only slightly soluble in water. This cleaner should be very efficient with this concentration of soap. It may not foam as readily as some other soap solutions because of the presence of alcohol.

In Formula 3, the foaming nature of the product is emphasized, saponin being present as a foaming agent but having no great detergent value. The low soap concentration precludes any dilution.

In Formula No. 4, again a foam cleaner, silicate is present as a soap builder. Borax gives such a relatively low pH that it reduces the efficiency of soap and should not be added to it. It is a mistake to think it promotes detergency in such a product. The ammonia and ether present should help loosen the soil, since the liquid is used without dilution.

A product originating in France intended particularly for cleaning automobile upholstery, is somewhat different from the preceding.

Naphtha	27. %
Soap	0.8
Water	72.2

An emulsion of petroleum solvent with water, this is designed to remove tar, oil and grease by the solvent power of the naphtha. The soap serves as emulsifying agent and would also exert its usual detergent action. This should take off bad grease spots not so readily removed with soap.

Paste Soaps

While paste soaps have been sold, they are not so popular as the liquids. By using soda soap, a solid paste is easily obtained, as in the following simple formulas.

1.	Soda soap	20. %
	Soda ash	0.5
	Water	79.5
2.	Soda soap	14.5%
	Borax	3.5
	Water	82.0

Soda ash is a good soap builder and the least expensive of the common builders, being cheaper than sodium metasilicate and trisodium phosphate. Borax is detrimental. These products are dissolved in the proportion of about 3 ounces in 2 quarts of water. The product having Formula No. 1 is misnamed a "Dry Cleaner." It naturally is not a dry cleaner in the usual sense of the term, but the name no doubt is intended to imply a

method of cleaning somewhat different from a regular washing procedure.

Powdered Cleaners

Powdered cleaners can easily be prepared by mixing powdered soap with suitable ingredients similar to those already discussed. Powders offer the advantage of packaging in a cardboard box rather than in cans or bottles, a consideration of serious moment at the present time. Examples of commercial products are the following.

1.	Soda soap	30%
	Trisodium phosphate	23
	Sodium metasilicate	3
	Borax	27
	Soda ash	8
	para-Dichlorobenzene	3
	Moisture	6
2.	Soda soap	52.5%
	Soda ash	31.5
	Moisture	11.
	Ultramarine	5.
3.	Soda soap	77.5%
	Soda ash	15.
	Trisodium phosphate	6.
	Oil of cedarleaf	1.5
4.	Soda soap	54%
	Trisodium phosphate	15
	Borax	30
	Naphthalene	1

In Formula No. 1 we have the usual cleaner of soap plus alkaline salts as builders plus the cheap but worse than useless borax. In the high proportion used here and in Formula No. 4, the borax in solution would have a buffer effect, lowering the pH of the solution. To some extent this will conteract the beneficial effect of the alkaline salts in the soap solution. *para*-Dichlorobenzene serves as a disinfectant and mothproofing agent. It is insoluble in water but could probably be dispersed by stirring into the soap solution. Whether actual mothproofing could be obtained should be determined by laboratory experiments. It seems probable that no more than a very transitory effect could be obtained at best. This may be in a class with the claim made for some of these products that they "deodorize." Does not any cleaning process deodorize?

Formula No. 2 gives a practical and inexpensive product, distinguished by its blue coloring with the pigment ultramarine. In No. 3, the soap content is unusually high, giving rapid cleaning action. Perfume makes the powder more attractive to the housewife and gives it a distinctive character to differentiate it from the kitchen granular and bead cleaners, for example. Naphthalene gives a characteristic odor to powder No. 4. It may be present for its psychological appeal: no claim is made for mothproofing properties, although naphthalene is one of the common moth-preventive agents. At any rate, the housewife probably accepts a product with this kind of odor as being endowed with some special cleaning properties—it smells as though it should do something different.

These powders with a relatively high soda-soap content have to be dissolved in hot water since, unlike potash soap, soda soap is only slightly soluble in cold water. The proportion recommended is a heaping tablespoonful in a quart of boiling water. The user is sometimes cautioned to apply these products only to color-fast dyes, since some colors run when wet by water. Since hot water is necessary with soda soap, this point is especially important in connection with the powdered products discussed. As before, the material being cleaned should be wet as little as possible, excess liquid being shaken off the brush or squeezed out of the cloth or sponge used.

Synthetic Detergents

Liquid containing synthetic detergents instead of soap are also commercial. Fewer of these have appeared on the market, probably because the active cleaning agent is more expensive than soap. Examples are:

1.	Fatty alcohol sulfate	2.0%
	Trisodium phosphate	1.5
	Alcohol	10.5
	Water	86.0
2.	Fatty alcohol sulfate	5.0%
	Sodium sulfate	2.0
	Hexalin	1.5
	Oil of wintergreen	
3.	Sulfonated organic detergent	0.1%
	Trisodium phosphate	6.5
	Sodium chloride	1.5
	Sodium sulfate	0.5
	Water	91.4

The liquid in Formula No. 1 is described as a concentrated foam cleaner to be diluted with 10-20 parts of water. This seems like rather high dilution as the product should be no more efficient as a cleaner than the same concentration of soap solution, except in hard water to which the fatty alcohol sulfates are resistant. To go back to soap, the reason that a final concentration of one-half per cent soap solution is often recommended is because of the manner in which the solution is applied. The material does not come into as intimate nor as thorough contact with the cleaner as it would in a washing machine, where 0.05-0.07 per cent soap solution together with a similar concentration of builder, is common practice. A one per cent solution of alcohol will have about the same cleaning action as plain water. Sometimes one concentration of cleaning solution is recommended for use on rugs, and half that concentration for use on upholstery materials, such as 1:10 for rugs, 1:20 for upholstery.

The sodium sulfate in the second formula is probably a contaminant or diluent of the fatty alcohol sulfate, since all of these sulfated and sulfonated products contain sodium sulfate from the method of manufacture, unless especially purified to get rid of the salt. Hexalin has special solvent properties, but not in the dilution recommended—1 part of liquid to 16 parts of water. It may be an odorant here, in addition to that of oil of wintergreen.

In Formula 3, the active detergent has been reduced to a minimum, probably because of its high cost, but even so, directions are to dilute with 4 parts of water. That leaves little better than a 1 per cent solution of trisodium phosphate to do the cleaning, which is all right for painted surfaces, as mentioned previously, but not very efficient for cleaning fabric materials.

As with other chemical specialties, a number of patents have been issued for products in this field, many of them highly impractical.

A patent of interest because related to the products under discussion contains sodium hypochlorite, soda ash, and sodium lauryl sulfate in aqueous solution.[1] As a matter of fact, the patent calls for calcium hypochlorite with soda ash used in excess of the amount required to react with the calcium present. This is probably a very good cleaner but could be used only on colors resistant to oxidizing agents, in this case the sodium hypochlorite. The hypochlorite would promote cleaning by attacking many kinds of stains; it would brighten some colors; it is also a sterilizing agent. This is no doubt intended for commercial rug cleaning rather than for home use, as the patent states that the treated rug is afterward rinsed.

General Considerations

Whether materials and containers will continue to be available for these products is a question. One answer may be a switch from the well established and popular liquids to a powder which can be put up in cardboard boxes. In the past, prices and sizes have varied greatly and seemed to depend more on the imagination and ambition of the compounder than on the actual cost. For example, a 3-ounce box of a simple soap-soda ash powdered mixture retailed for 50 cents, while a 5-ounce box of a similar mixture with a much higher soap content—the more expensive ingredient—retailed for 30 cents. Of the liquids, a 6-ounce bottle may retail for 10 cents, a 16-ounce bottle of another liquid for 50 cents. Price, and therefore size, has to be related to the distribution outlet. Some people aim at the chain-store trade, others at regular houseware sections in department stores.

Since strong foaming power has been expected in the past of these products, this should be sought in developing a new formula, either by the choice of a suitable soap composition or by the addition of special foaming agents. The market for rug and upholstery cleaners has been developed—the problem now is to produce them under the handicap of upset conditions, and changing material and container supplies.

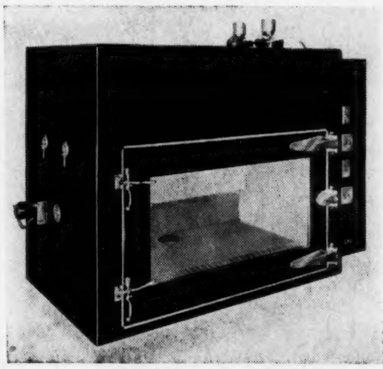
[1] The Mathieson Alkali Works. British Patent No. 526,647 (1940).

NEW EQUIPMENT

Controlled Temperature Test Chamber — QC 202

Many precision instruments today must function equally well in chilly Iceland and sun-baked Libya. With just such requirements in mind, a new chamber for testing instruments under extremes of cold and heat has been developed and is now manufactured by American Coils, Inc. Its range of operating temperatures extends from minus 55 degrees C. to plus 70 degrees C. It includes apparatus for mechanical refrigerating and electrical heating.

The model illustrated is known as Model RTC-1, and consists of a two-stage condensing unit, heat exchanger, liquid sub-cooler, coil or evaporator, expansion valves cabinet and forced draft strip heater, along with thermostats and other controls and connections for each. The entire operation of the Model RTC-1 is completely controlled from a front panel board, where the master switch is located along with the off-fan control, light switch and receptacle switch.



This completely automatic testing cabinet is in itself a precision machine and when used to test instruments assures scientific control of all temperatures. It can reproduce whatever temperature is desired between minus 55 degrees C. and plus 70 degrees C. It can maintain the temperature at any level so that actual service conditions may be created. In addition to providing temperature uniformity, the RTC-1 assures positive air circulation.

Refrigeration is rapid, and the cabinet without production load should reach minus 50 degrees C. in approximately one hour. The compressor maintains the refrigerant temperature in the coil and is controlled solely by a pressure switch. The coil in turn cools the chamber by means of recirculation of the air within the cabinet The coil is located above a divider partition upon which are located the fans and dampers controlling the quantity of air passing over the coil.

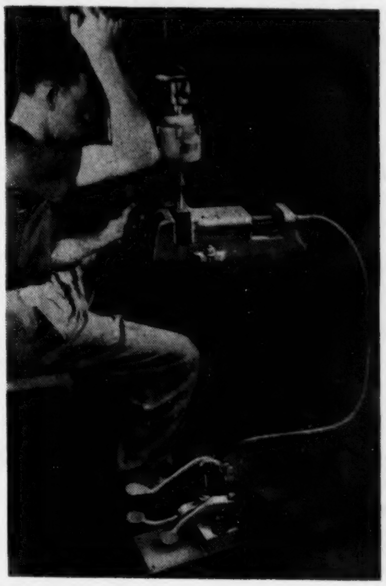
The electrical hookup is such that when the master switch is in the refrigeration position, the heater circuit is automatically disconnected. When the master switch is in neutral or in heater position, the coil is automatically pumped dry of refrigerant. To do this, a solonoid valve is located in the liquid line. A hand operated valve is located in the same line to be used under special conditions.

Observation of instruments being tested is provided by an inner door with five glasses sealed and dehydrated against future passage of moisture. The inner glass is Tuf-flex Tempered Plated Glass. The visible opening is 46″ wide by 21½″ high. These five thicknesses of glass form part of the steel-framed door which has a clear opening of 51½″ wide by 26½″ high.

The all-steel cabinet occupies space 83″ wide by 56½″ high by 42″ deep. The usable interior is 59″ by 28″ high by 30″ deep, with an interior cubic content of 28.7 cubic feet. The cabinet contains six inches of fiberglas insulation.

Hydraulic Vise — QC 203

The Studebaker Machine Company has just announced a new "Drilvise" for use by tool and die makers, machinists and machine operators; and designed for holding work on the table of all types of drill presses, planers, shapers, milling machines, surface grinders, lathes, cut-off saws and other machines.



Entirely foot controlled and hydraulically operated, this new tool permits the use of both hands in the operation, set-up and removal of work from the machine on which it is mounted. Exceedingly powerful, exerting in excess of 10,000 lbs. per sq. in. pressure between the jaws, this unit is ideally adapted for hundreds of machine shop uses. Though of sufficient weight (74 lbs.), yet not cumbersome, many jobs can be handled without bolting or clamping to the machine table

Self-sufficient, requiring no outside power or air supply, the unit consists of a conventially-shaped drill press vise (but without the usual screw or handle) and connected to it by a 6-foot

Fill Out Reverse Side for Further Information

length of flexible rubber tubing is a hydraulic foot control base. Parts are readily portable and can be easily moved from machine to machine.

Work is placed between the open jaws of the vise, the operator moving the rear jaw toward the stationary front jaw by depressing with one stroke middle pedal of the foot control. This operation moves the rear jaw against the work exerting just the right amount of pressure to only grip the work. The right or booster pedal moves the jaw a maximum of 3/16″ for each downward stroke of the foot and exerts a maximum non-slipping pressure of 10,000 lbs. per sq. in. To release work held between the jaws, the left pedal is depressed with one downward movement of the foot. Should it be necessary during a machining operation to re-tighten work in the vise, one downward movement of the foot is all that is necessary to re-establish a 10,000 lb. per sq. in. pressure.

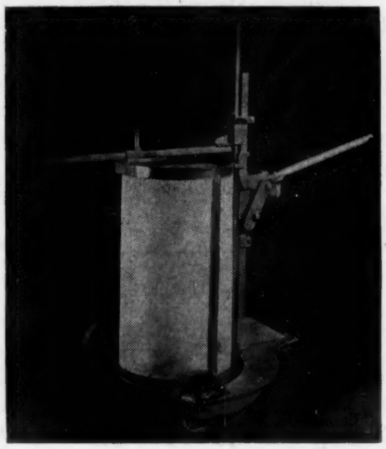
The company says that the "Dril-vise" is entirely safe in operation. Fingers cannot be crushed as only the rear jaw is moveable and the work-holding pressure movement of this jaw is controlled by the operator's foot and then in a maximum of 3/16-inch advances for each downward movement of the pressure foot pedal. There are no sudden pressure snaps or uncontrolled movements of the jaws.

Drum and Barrel Carrier QC 204

Ernst Magic Carrier Sales Company has announced a new drum and barrel carrier.

The new model is designed to handle light wood, fiber, paper barrels and "one-trip" light gage steel containers with or without chimes.

Its capacity is 800 pounds and will accommodate drums and barrels from 14″ to 24″ diameters.

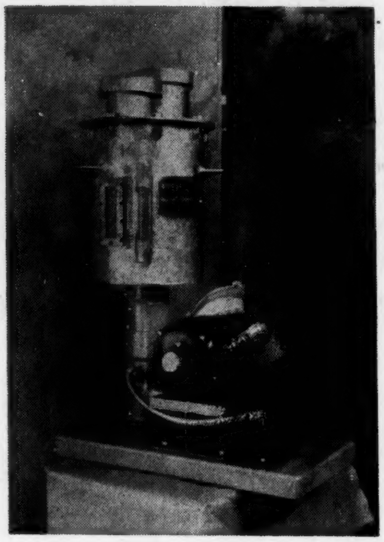


Three-wheel construction automatically balances the load for safer and easier moving of containers. The company claims that operation is so simple that one man can attach the clamp, pull down on the handle, lift the container off the floor a few inches, and move it any distance. Another important feature is the straight, vertical lift of the barrel from the floor to prevent any flowing over of contents from open-head containers.

Moisture Controller QC 205

Lectrobreathers, developed by Pittsburgh Lectrodryer Corporation, are used to prevent the entrance of atmospheric moisture into oil and chemical tanks by the use of activated aluminas as adsorbents.

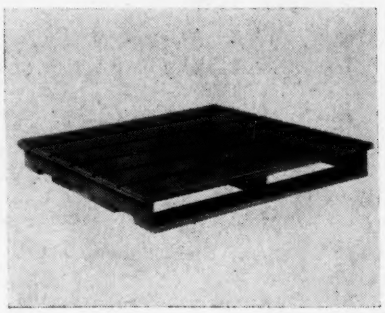
Lectrobreathers permit only dry air to enter the tank when it is emptied or when air enters due to temperature drops. Air leaving the tank, being thoroughly dry, has a partial reactivating effect which makes possible long periods between reactivations. They are mounted either directly on the tank or piped to it and are equipped with a color indicator for determining when reactivation is needed or when it is complete. Where Lectrobreathers are required for several tanks, the standard practice is to use one on each tank and a central reactivator for all



breathers. The reactivators are built for electric operation as standard for all units or for steam operation on the two larger units. Special Lectrobreathers are available for use on transformers or other equipment where atmospheric moisture is harmful.

New Type Pallet QC 206

The Union Metal Manufacturing Company of Canton, Ohio, maker of steel skids, boxes, pallets, and other materials handling units, has announced a new pallet, consisting of top and bottom wood slats, reinforced with steel at the ends and in the center. Bolted Construction permits easy replacement of the wood slats, while the steel ends protect the pallet from damage by power fork trucks.



According to the manufacturer, vital metal is thus conserved without sacrificing strength and all-around usefulness, and ease of handling is preserved.

* * * * * * * * * * * * * * *

For more information, circle the reference numbers on the postcard below. Give your name, company and address. Detach and mail. No stamp required.

Chemical Industries, 522 Fifth Avenue, New York, N. Y. (10-2)

I would like to receive more detailed information on the following equipment. (Circle those desired.)

QC202 QC203 QC204 QC205 QC206

Name .... (Position) ....

Company ....

Street ....

City and State ....

Charles
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Headliners in the News

Dr. Donald S. Frederick of Rohm & Haas Co. received the annual John Wesley Hyatt Award for outstanding contribution to the plastics industry at a dinner in the Waldorf-Astoria, New York City, Oct. 30. He is shown here receiving the gold medal, which in addition to $1,000 constitutes the award, from Dr. Lyman J. Briggs, director of the National Bureau of Standards and a member of the awards committee. Dr. Frederick was honored for his work in adapting transparent, colorless acrylic plastics to the needs of military aircraft.

Charles G. Maier, noted research metallurgist, has been named to the supervisory staff of Battelle Memorial Institute. He was with the Bureau of Mines for 20 years.

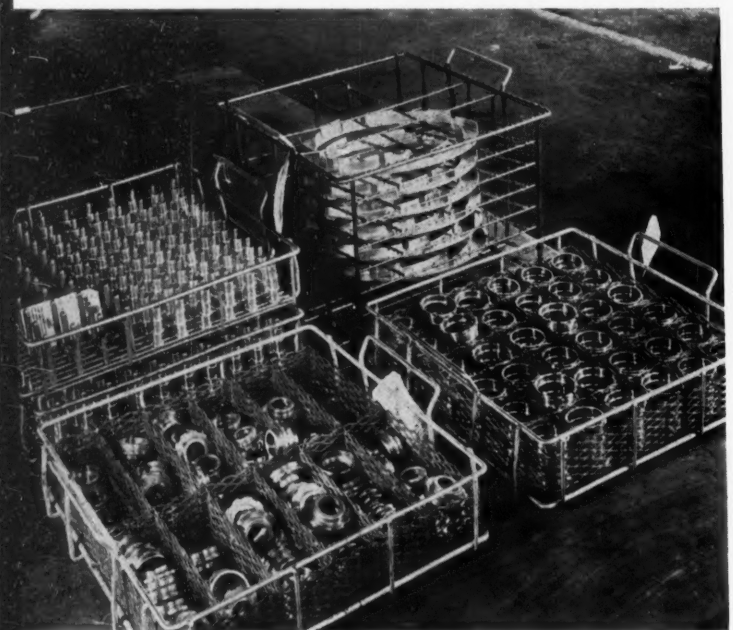
Dr. O. A. Nelson, former research chemist with the Department of Agriculture, has been appointed to the technical Staff of Battelle Memorial Institute, Columbus, Ohio.

Cecil E. Johnson, formerly director of research for the engineering division of Reddir, Inc., is now with the Dicalite Co. as a sales engineer in New York and adjacent territory.

Dr. Gustav Egloff, director of research for Universal Oil Products Co., spoke on "Wartime Chemicals from Natural Gas" at a testimonial dinner given in his honor by the New York Chapter of the American Institute of Chemists at the Chemists' Club Oct. 23. Dr. Egloff is president of the Institute. Speakers who paid tribute to Dr. Egloff's many contributions to American Chemistry were Dr. Robert J. Moore of the Bakelite Corporation, Col. George A. Burrell of the Atlantic States Gas Co., and Dr. Marston T. Bogert of Columbia University. Dr. E. H. Northey of the Calco Chemical Division of the American Cyanamid Company, who is Chairman of the New York Chapter of the Institute, presided.

Shots of Interest from Here and There

Here's a big load of scrap picked up recently by some of Rumford Chemical's men. At the left of the picture is George W. Penny, advertising manager. Leaning on the right front fender is P. B. Kimball, production manager. Seated on the bumper are J. P. Murphy also of Rumford and Wesley Sharpe, well-known Rhode Island oil man. Others in the crew are William Smith and Owen Reid.



A new coating for wire transporting and degreasing baskets is now being manufactured by Resistoflex Corp. Coating is a modified polyvinyl alcohol resin in solution form. Method is to dip the baskets and dry in oven.

Below, some of the 3,202 tons of scrap turned in during Michigan Alkali Co.'s recent drive. In addition to this, 20 tons of industrial rubber were salvaged.

Walter Kidde & Co., compressed gas experts, recently put up simple and graphic posters to educate new workers as to the significance of the airplane and naval life-saving devices and fire extinguishers they make. The posters are changed frequently.

Below, one of the most popular paintings from the first World War—a soldier bidding farewell to his hunting dog—will make its second wartime appearance on the Hercules Powder Company calendar where it made its debut 25 years ago.

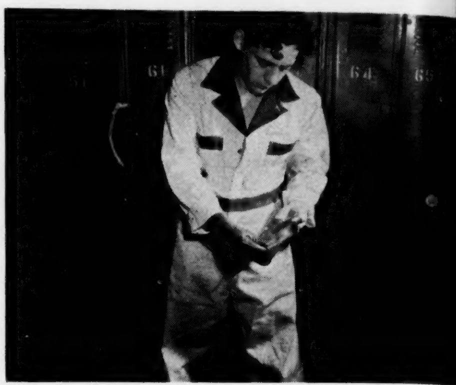
Proper Care of Rubber Gloves

B. F. Goodrich Co. had these pictures taken to show the right way to take care of rubber gloves. If the glove fits the job, the company points out, you'll get longer service, greater hand protection and be assured of greater working efficiency. Acid gloves should be heavy gauge to prevent any danger of torn rubber or the slightest penetration of acid. CI hopes you will follow these directions in your plant.

Be sure to wear the right kind of gloves for each job.

This shows an extreme case where wrong size glove impairs efficiency.

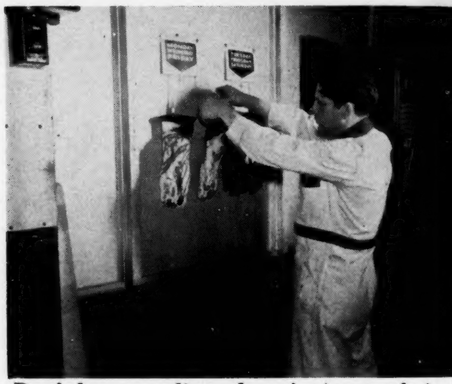
Misfit gloves do not last long. They increase accident rate.



Peel gloves off the hand like this . . .

not like this because you may tear them.

Keep gloves away from solvents. Clean gloves thoroughly after use with luke warm water and good grade soap. Rinse in cold water.



Don't hang up dirty gloves! Accumulation of dirt is likely to attack the rubber and shorten its life, especially if you work around grease, oils or solvents.

Use talcum powder to prevent tackiness. Dust inside well each time they are removed. Be sure hands are dry when you put them on.

Rotate gloves in use. Keep two pairs and use an every-other-day routine. They wear out less frequently this way.

Patch tears or snags in the gloves as they develop. It is not considered safe to patch fingers or palms of electricians' or acid gloves, however.

Install a rubber salvage box where wornout rubber gloves and other rubber articles can be discarded.

PRODUCTION ON THE WING!

Baker *helps you meet wartime emergencies with High Purity Chemicals—Tonnage Producing Capacity*

Throughout the nation production is soaring.

But it must move still faster. Wartime demands, in ever-increasing volume, are pouring in upon manufacturers.

Every day, chemists and production executives engaged in new fields of work are faced with new problems. Every day, their need for tonnage chemicals of exacting specifications is more urgent.

To these men, Baker offers assistance.

We, too, have enlarged our facilities and you can get tonnage chemicals of unusual purity from Baker.

We invite you to call upon Baker—and to rely upon Baker as a reliable source of supply. Baker will gladly contribute the combined knowledge of its Technical, Executive and Manufacturing Staffs to meet any wartime problem.

J. T. Baker Chemical Co., ***Executive Offices and Plant:*** **Phillipsburg, N. J.** ***Branch Offices:*** **New York, Philadelphia and Chicago.**

Baker's

INDUSTRIAL CHEMICALS

"This is the first time he's stopped talking about those Tri-Sure Closures!"

"YOU remember how he used to worry about the weather all the time? Afraid it was going to rain—and seep into those drums of his? He said those old-fashioned plugs were more expensive than fur coats — because they ruined thousands of dollars worth of gasoline.

Now, since he put Tri-Sure Closures on his drums, he never talks about the weather — or yells 'pilferage,' 'contamination' and 'sabotage' in his sleep. He just smiles and says, 'Boy, that Tri-Sure seal sure keeps the gas in and those tough guys out,' or 'Gosh, that Tri-Sure plug is the tightest thing I've seen since your Cousin Elmer left town.'"

Tri-Sure
Reg. U S Pat. Off
CLOSURES

AMERICAN FLANGE & MANUFACTURING CO., INC., 30 ROCKEFELLER PLAZA, NEW YORK

NEWS OF THE MONTH

GENERAL

Profits Announced

THIRTY-EIGHT American chemical manufacturing concerns realized $431,000,000 net profits from operations last year, compared with $275,000,000 in 1940, the Securities and Exchange Commission reported this month.

The figures listed in one of a series of surveys being made by the SEC, showed sales of $1,755,000,000 for the companies in 1941, and $1,253,000,000 in 1940.

Net profit after all charges, however, dropped from 16.7 per cent in 1940 to 12.7 per cent in 1941. The dollar figures were $223,000,000 in 1941 and $210,000,000 in 1940.

The survey also included five fertilizer manufacturing concerns, as a related industry. Sales of these concerns increased from $75,000,000 in 1940 to $84,000,000 in 1941; net profit from operations, from $3,200,000 to $5,300,000, and net profit after all charges, from $2,600,000 to $3,900,000. Percentages of the latter also rose from 3.4 to 4.6.

Seized Patents Offered

Drawings and specifications of foreign-owned patent applications seized by his office will be printed and made available to American industry at a nominal price, Leo T. Crowley, Alien Property Custodian, announced this month. These applications ordinarily cover latest developments in patentable fields and many can improve American processes and devices.

Publication of the printed copies of patent applications will begin during December. Applications will be listed as they are printed, in classified order, in the Official Gazette of the United States Patent Office. Announcement of the cost of copies and of the method of purchase will be made in the same publication.

Meanwhile, the Alien Property Custodian will make the information contained in the files of these applications available, insofar as is practical, to any person residing in the United States having a genuine legitimate interest therein.

The power to inspect, which will give the name of the person for whom the inspection is made, will be made a part of the file in the usual manner.

This action is necessary as far as pending patent applications are concerned because such applications are normally maintained in secrecy by the Patent Office. The files of issued patents, on the other hand, are open for public inspection by everyone.

New Magnesium Sources

Several extensive magnesium-bearing deposits in the Boulder Dam area of Nevada and California which possibly can be used as additional sources of raw material for the new magnesium plant near Boulder Dam, Nev., are described in a recently-published information circular of the Bureau of Mines, Department of the Interior.

ACS To "Scrap Out" Talent

A program to "scrap out" idle scientific ability and put it to work directing segments of war research problems in the laboratories of smaller colleges has been initiated by the American Chemical Society, which comprises 32,000 members, it is announced by Dr. Charles L. Parsons, secretary of the Society.

Unused talents of retired directors of research from the universities and industry will be meshed with departments of chemistry in institutions where the staff is not sufficiently large or well equipped to carry on research alone, according to the plan, which will be executed under the direction of a committee of the Society headed by Dr. J. Sam Guy, chairman of the chemistry department at Emory University, Atlanta, Ga.

Appointed to the committee are Dr. William Lloyd Evans of Ohio State University and Dr. Samuel C. Lind of the University of Minnesota, both past presidents of the Society; Dr. Hobard H. Willard of the University of Michigan; Dr. E. Emmet Reid, professor emeritus of the Johns Hopkins University; Dr. B. Smith Hopkins, professor emeritus of the University of Illinois and the discoverer of the element illinium; and Dr. Stuart R. Brinkley of Yale University.

HONORED

Professor Arthur B. Lamb of Harvard University has been awarded the 1943 William H. Nichols Medal of the New York Section of the American Chemical Society, one of the highest honors in chemical science. Professor Lamb was cited as an authority on inorganic chemistry, and as an investigator and administrator who has earned a permanent place of honor in the world of science.

Baumgartner, Elias Wed

Dr. Leona Baumgartner, director of the bureau of child hygiene for the N. Y. City Dept. of Health, and Nathaniel M. Elias, head of a firm of consulting engineers and at present consultant to the Board of Economic Warfare, were married Nov. 6 in New York.

Chemists Wanted

A nationwide examination for recruiting qualified men and women for the position of chemist for the Los Angeles Water and Health Departments has been scheduled by the Board of Civil Service Commissioners of that city for December 4. Further information and application forms may be obtained at the Los Angeles City Civil Service Commission, Room 11, City Hall.

Duff Fellowship

P. Duff & Sons, Inc., Pittsburgh, Pa., has founded in Mellon Institute an Industrial Fellowship that will be concerned with the scientific investigation of problems in the production,. improvement, properties, and uses of cane molasses; the development of better and new cake mixes, and the evolution of other ready-to-use mixes for baking purposes, embracing composition, preparation, packaging, and storage.

Explosive Figures

The government has $400,000,000 invested in the ordnance explosives plants operated or now being designed by Hercules Powder Co. for the War Department, Mahlon G. Milliken, company official, disclosed recently with approval of the War Department.

Milliken pointed out the chemical company's war program amounted to two-thirds of the $600,000,000 synthetic rubber construction program contemplated by twelve of the largest chemical, rubber and oil companies.

Nylon Wanted, Too

Scrap nylon will help win the war. This newest addition to the salvage drive is announced by the Nylon Division of E. I. du Pont de Nemours & Co. which has developed a method of converting the nylon yarn waste back to some of the complex chemicals from which the fibers were made originally.

Cites Synthetic's Progress

The half century it took the natural rubber industry to reach an annual production of 600,000 tons will be duplicated in one twenty-fifth the time by the chemical industry in providing 1,100,000 tons of synthetic rubber by 1944, Dr. Charles Allen Thomas of Dayton, Ohio, director of the Central Research laboratories of Monsanto Chemical Co., said Nov. 12 at a meeting in St. Louis of 1,800 sales executives representing a cross section of American industry.

Asks Inventory Reports

Acting on evidence of slow-downs in the production of urgently needed munitions and other war materials, due to the scarcity of critical chemicals, H. M. Brundage, Regional Deputy Director, WPB, in charge of priorities and materials, recently asked all chemical manufacturers, suppliers and users in the New York-Northern New Jersey area to report their holdings of idle, excess or frozen stocks of critical chemicals to WPB regional headquarters.

Full details as to specifications, quantities and the location of some 150 chemicals—those listed in Schedule A to Priorities Regulation No. 13, which authorizes the sale of idle, excess or frozen stocks to specified purchasers—are requested. Copies of Priorities Regulation No. 13, with the complete list of critical chemicals, are obtainable at all WPB offices in this area.

Rare Instruments Listed

The Committee on Location of New and Rare Instruments has the following offers and requests.

Instruments offered: Curie Electrometer (Paris make), Loewe-Zeiss Liquid Interferometer, L. & N. Portable Potentiometer (No. 7655) with 2 quinhydrone and 1 calomel electrodes, Microammeter, D'Arsonval Type (Model S of Sensitive Research Instrument Corp.) Rental only. Quartz Microscope, Siemens & Halske Optical Pyrometer, Two-circle Reflecting Goniometer (several), Welch D.C. Volt-Ammeter (0-150v. 0-15a.), Westinghouse 4-unit moving coil Type PA Oscillograph with three galvanometers, Weston Galvanometer (No. 375), Weston Galvanometer (No. 440), Weston Voltmeter (No. 280).

Instruments needed: Coleman Spectrophotometer (10 requests), Grating Spectrograph (9 requests), Leitz Ultrapak or equivalent, Quartz Spectrograph, Zeiss Optimeter, Zeiss Pulfrich Refractometer (8 requests).

If you have rare instruments you would be willing to sell, lend or lease for essential war research or if you need such instruments, write to D. H. Killeffer, 60 East 42nd St., New York City, chairman of the committee, who has particulars on the offers and requests mentioned above.

California Alcohol?

Studies looking toward possible utilization of California wineries for alcohol for the synthetic rubber program are being made by the War Production Board.

If the findings are favorable, it is possible a plant for making butadiene from alcohol will be installed on the Pacific Coast. Present West Coast plants will make butadiene from petroleum.

Appeals for Quinine

An appeal to the nation's chemists to sell their reserves of quinine to the Government for the use of the armed forces is issued by Dr. Harry N. Holmes, president of the American Chemical Society. A preliminary search in the laboratories of New England universities yielded results so substantial that Dr. Holmes, who is head of the department of chemistry at Oberlin College, has started a general roundup of supplies that can be spared.

"At the risk of seeming officious," he said, "I am asking every chemist who can sell the government any amount of quinine at this time to write me, so that I can forward all the letters to the proper medical authorities. If they do not want it, that is their responsibility.

"Please do not send me any quinine, for that will not be the best way to manage it."

COMPANIES

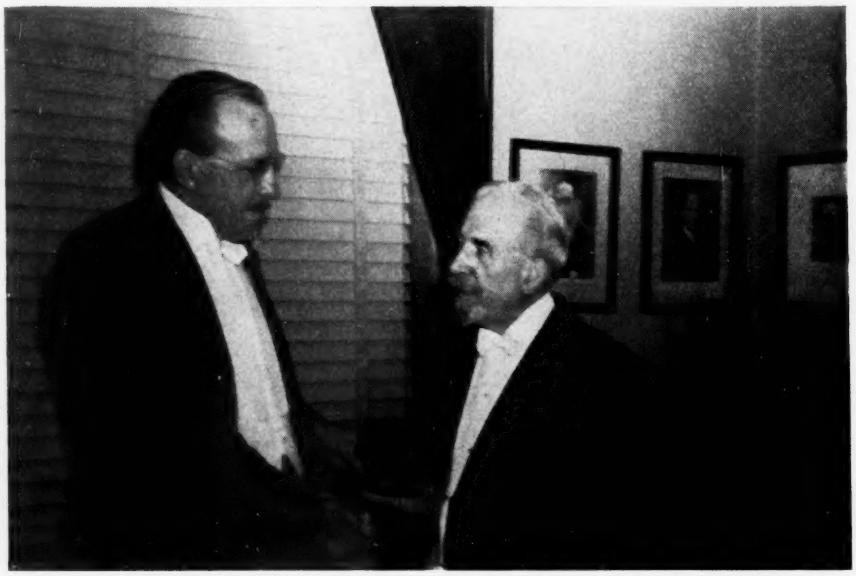
Goodrich Gives Rubber Seeds

B. F. Goodrich Co., Akron, O., has made a gift to the Department of Agriculture of thousands of seeds from selected Hevea rubber trees growing in its experimental nursery on Santo Domingo island. The seeds are for the projected program for cultivating the growth of rubber plants in this hemisphere.

Castor Oil Vital

"Castor oil is much more important to the American war effort than is coffee," J. Edmund Good, vice-president of Woburn Degreasing Co., N. J., said in an address before the National Farm Chemurgic Council's regional conference in

Dr. Work Presents Medal to Dr. Howe



The Chemical Industry Medal for 1942 was presented Nov. 7 to Dr. Harrison E. Howe, Editor of *Industrial and Engineering Chemistry*, at a joint meeting of the American Section of the Society of Chemical Industry, the New York Section of the American Chemical Society and the New York Section of the American Institute of Chemical Engineers, held at The Chemists' Club, New York City. The chairman, Dr. Foster D. Snell, presided.

Dr. Gustavus J. Esselen, President of Gustavus J. Esselen, Inc., spoke about the personal side of the medalist's life and Mr. Watson Davis, director of Science Service, spoke on his accomplishments. The medal, which may be awarded annually for valuable application of chemical research to industry was presented to Dr. Howe in recognition of his far reaching influence achieved through years of service as an educator and leader in applied chemistry. The presentation was made by Dr. Lincoln T. Work following which Dr. Howe gave an address on "Chemistry in International Affairs."

Cincinnati, O., Nov. 18. He called for extensive plantings of castor beans here as an industrial crop to supplement imports from Brazil so that our production of war machinery will not be halted.

Gets Second "E"

The Navy Board for Production Awards has announced that a second All-Navy "E" Award has been won by Farrel-Birmingham Company, Inc., Ansonia, Conn. Each of the company's three plants—at Ansonia and Derby, Conn., and Buffalo, N. Y.—have earned the privilege of flying the Navy "E" burgee with a white star added.

Fellowship Founded

Hawley Products Co., St. Charles, Ill., manufacturer of molded cellulosic and allied plastic products, has founded an Industrial Fellowship in Mellon Institute, Pittsburgh, for the purpose of conducting an investigational program of importance to our armed forces.

Dr. J. C. Williams, an alumnus of Oberlin and Iowa State College, a specialist in cellulose chemistry and plastics technology, has been appointed to the incumbency of this Fellowship.

Merck "Mail Leader" Again

For the fifth successive year, Merck & Co. Inc., manufacturing chemists, Rahway, N. J., has been selected as one of the 50 direct mail leaders of the United States and Canada. This year, the company also won the typography plaque awarded by the American Type Founders Corp. for "The Best Example of Modern Typography in a Direct Mail Campaign." D. W. Coutlee, director of advertising, received the two awards at the Direct Mail Advertising Association's annual meeting held at the Roosevelt Hotel, N. Y. City, Oct. 16.

Republic Expands

Republic Filters, Inc. (formerly American Seitz Filter Corp.), Paterson, N. J., has increased its capacity. Republic is working practically on filtration equipment for blood, pharmaceuticals, chemicals for high explosives and other purposes, as well as aircraft, searchlight, machine tool parts and many other items.

Texas Gulf Honored

Texas Gulf Sulphur Co. was awarded the Army-Navy "E" flag for outstanding accomplishments in the production of war materials in a ceremony Nov. 2, at Newgulf, Texas. More than 4,000 employees of the firm attended the ceremonies and heard speeches by Brigadier General Ray L. Avery, Commanding Officer, Edgewood Arsenal, and Commandant, Chemical Warfare School, and Rear Admiral P. W. Foote, United States Navy.

Buys Firm's Half Interest

Standard Oil Co. of New Jersey has purchased National Distillers Corp.'s one-half interest in the Standard Alcohols Co. Purpose in getting full ownership was to integrate this business more completely with the company's other chemical operations.

Standard Alcohol manufactures and sells industrial alcohols and other solvents made from refinery gases. It was organized in 1932 by Standard Oil and National Distillers.

Foreign Owned Shares Held

Leo T. Crowley, Alien Property Custodian, recently announced that he had taken over 480,000 shares of American Potash & Chemical Corp. stock owned by foreign nationals. Company manufactures and sells heavy chemicals.

This action, Mr. Crowley added, implies no criticism of the present officers and directors of American Potash & Chemical Corporation, who have a long record of successful management and who will continue in charge of the Company's business. Head offices of the Corporation are in New York. Its plant is at Trona, Calif.

Return Cylinders!

The shortage of cylinders for chlorine, ammonia, carbon dioxide, and other compressed gases needed by many essential industries is becoming more and more acute, and, to prevent drastic restrictions in the distribution of these chemicals, all users and transportation companies must cooperate in returning the containers to the producers, warns R. J. Quinn of the Mathieson Alkali Works, Inc.

To Build Detinners

Blaw-Knox Co. has been awarded a contract amounting to approximately $1,000,000, by the H. K. Ferguson Company, for the design and fabrication of 14 new type detinning drums for use in salvaging tin from cans.

Neon in "Priorities"

Neon and the other inert gases of the air are discussed in the November issue of "Priorities," house magazine of Prior Chemical Corp.

Brothers Honored

Two brothers, officials of the Sparkler Filter Manufacturing Company of Mundelein, Ill., have been signally honored by the James F. Lincoln Arc Welding Foundation of Cleveland, Ohio, in its $200,000 nation-wide industrial study on arc welding. C. Kracklauer, president, and W. J. Kracklauer, sales manager of the company, have each received recent awards from the foundation.

ASSOCIATIONS

Consultants Meet

Annual meeting of the Association of Consulting Chemists & Chemical Engineers, Inc., was held at The Chemists' Club, N. Y. City, Oct. 27, in the form of a symposium entitled "The Consulting Chemist and Chemical Engineer in War and Peace." Wm. J. Schepp of the Schepp Labs., Inc., East Paterson, N. J., was the speaker of the evening.

Election of new officers and directors was announced as follows: president, H. P. Trevithick, N. Y. Produce Exchange, Bureau of Chemistry; vice-president, Albert Parsons Sachs; secretary, Henry M. Shields, Mid-Town Coal Labs.; treasurer, Wm. C. Bowden, Jr., Ledoux & Co., Inc.

New catalog of the association is available.

Rubber Group to Meet

Chicago Rubber Group meets Nov. 27 at the Sherman Hotel.

J. W. Crosby, sales manager of the Thiokol Corp., will be the speaker.

Following Mr. Crosby's talk, two movies, in color, from Esso Laboratories, "Rubber Goes Synthetic" and "Bouncing Molecules," will be shown.

Paint Club Meets

Golden Gate Paint and Varnish Production Club met Oct. 26 at the Hotel Bellevue, San Francisco. Officers elected for 1943 were as follows:: president, S. U. Greenberg, California Ink Co., vice-president, L. A. Thompson, National Lead Co., secretary, R. Bertholf, Pacific Paint and Varnish Co., treasurer, R. J. Hawkins, the Glidden Co.

Cites Fertilizer Demands

"Due to the great need for increased production to meet crop goals and to increase farm income, the demand for commercial fertilizers next season will be the heaviest in our history," said Dr. F. W. Parker, head of the Division of Fertilizer Investigations, U. S. Department of Agriculture, in addressing the National Fertilizer Association in Atlanta, Nov. 17.

"Productioh of superphosphate will reach a new high this year, and, barring difficulties in the transportation of phosphate rock and sulfur, there will be enough to meet all demands. The supply of concentrated superphosphate will be

somewhat reduced, due to export to other United Nations."

In closing, Dr. Parker stated that, "The fertilizer industry is to be commended for the way in which it has worked with various governmental agencies on fertilizer problems. It has assumed a real task in accepting this responsibility for the equitable distribution of fertilizers in 1943. It is expected to measure up to the task and to the responsibility."

Packaging Group Meets

Packaging Institute, Inc., has announced the officers and directors elected at its annual meeting and packaging conference held on Nov. 5-6, at the Hotel New Yorker, New York. The meeting re-elected the following officers: president, Joel Y. Lund, vice-president, Lambert Pharmacal Co., St. Louis; vice-president, A. Vernon Shannon, sales manager, Westfield River Paper Co., Russell, Mass.; vice-president, Wallace D. Kimball, 1st vice-president, Standard-Knapp Corporation, Portland, Conn.

Egloff Endorses Plan

Endorsing a reported plan by Senator Robert A. Taft to introduce an amendment to the Manpower Bill to insure a continuous supply of highly trained technicians for the war effort, the American Institute of Chemists made public today a telegram sent to the Senator, last Friday, by the Institute's President, Dr. Gustav Egloff.

The telegram read:

"Heartily agree with your proposed amendment to manpower bill to insure adequate supply of scientifically and technically trained men and women. Suggest three steps in this direction. First, do not draft any scientists or technologists. Retain chemists, chemical engineers and other scientifically trained persons in present war-time production jobs. Second, continue to graduation education of scientific and technical students both men and women. Third, encourage more women to study sciences to fit them for technical war jobs. I estimate 75,000 to 100,000 graduate chemists and chemical engineers in United States. Stop. War plants already operating, under construction or planned to produce war materials such as aviation gasoline, rubber and explosives and many other war efforts will require at least double this number, not to mention other services contributing to the war effort such as technical branches of army and navy. As director of research of Universal Oil Products Company, I am personally concerned at developing serious shortage of technically trained men and women."

Senator Taft's plan for an amendment, which would direct the President to select not over 25,000 individuals from each "teen-age" draft to complete their education for essential army, navy, and civilian war purposes, was reported a few days ago by David Dietz, science writer, following an interview with the Senator in Cleveland.

Dr. Egloff's suggestions, while endorsing the Senator's plan, go one step farther, and urge that all technicians as well as students majoring in science or technology be exempt from the draft for future war industries jobs.

Paint Club News

Cleveland Paint, Varnish & Lacquer Association has set Dec. 18 tentatively for its annual Christmas Party which is planned for the Rainbow Room of the Carter Hotel. The Production Club elected the following officers at its Oct. 16 meeting: Ralph Elmer (Columbus Varnish), President; Albert Batterman (Forbes Varnish), Vice-President; H. M. Wilcox (Ferbert-Schorndorfer), Secretary; R. A. Burtzlaff (Forbes Varnish), Treasurer.

Meeting of the Baltimore Paint & Varnish Production Club was held at the Belvedere Hotel Nov. 6. Thirty-one members and guests were present.

New officers include: Dr. S. Ira Wilbur, President; Wm. J. Meichner, Vice-President; Francis Scofield, Treasurer; R. H. Sawyer, Secretary.

November meeting of the Cincinnati, Dayton, Indianapolis, Columbus Paint & Varnish Production Club was held Nov. 9 at the Miami Hotel, Dayton, O. Speaker of the evening was Dr. A. C. Elm of the New Jersey Zinc Sales Co. He spoke on "Resin Oil Emulsion Paints."

Regular meeting of the St. Louis Paint and Varnish Production Club was held on Oct. 27, 1942, at the Claridge Hotel. Guests present were Capt. Caldwell and Capt. Pallman of the U. S. Army Air Corps Camouflage Division, Messrs. Herb Matill of Werner G. Smith Co., E. Shepherd of National Lead Co., C. H. Cox of St. Louis District Ordnance Department, Karl Kelly of Glidden Company, S. J. McGrath of Phelan-Faust Paint Mfg. Co., and Henry Beakes of Kentucky Color Company.

Speaker of the evening was Henry Beakes of the Kentucky Color Co. who spoke on Zinc Chromate Primers and Infra-Red Reflecting Paints.

Delgado Speaks

Drug, Chemical and Allied Trades Section of the N. Y. Board of Trade held its 52d annual meeting and election Nov. 17 at the Drug and Chemical Club, N. Y. City.

Guest speaker was Frank L. Delgado, chief, drugs, fine chemicals and health supplies section, Office of Price Administration.

Landis Addresses Juniors

Dr. Walter S. Landis, vice-president of American Cyanamid Co., was speaker before the Nov. 12 meeting of the Junior Chemical Engineers of New York, at Childs Restaurant, 109 West 42d St. His topic was "Meeting the Materials Shortages Through Chemistry."

Evans Associates at Dinner

In appreciation of their efforts and accomplishments during the year, Ralph L. Evans Associates, consulting research chemists, reversing the usual practice, gave a testimonial dinner for its own staff. Sixty-eight attended.

The gathering was held at the Hotel Biltmore on Friday evening, October 30, 1942.

PERSONNEL

Elected to "Poly" Corporation

Walter J. Murphy, editor, CHEMICAL INDUSTRIES, has been elected a member of the Corporation of the Polytechnic Institute of Brooklyn. Mr. Murphy is a member of the Class of 1921 and will serve on the Board as alumni member through 1945.

Walter J. Murphy, editor, CHEMICAL INDUSTRIES, will discuss "The History of the Merchandising of Chemicals" before the student body of Rose Polytechnic Institute, Terre Haute, Ind., on Nov. 19. He will address the Western Section of the American Chemical Society on Thursday, Dec. 10, at Buffalo on the subject "The Chemists' Contribution to the War Effort."

More Personnel

Dr. Calvin Yoran, until recently associated with the Featheredge Rubber Co., Chicago, has joined the staff of the Research Laboratory of Wishnick-Tumpeer, Inc., as chief chemist.

Charles D. Young, formerly district manager of Metal & Thermit Corp.'s Chicago office, has been appointed sales manager of the Welding Division of the corporation in New York. **Merritt L. Smith,** advertising manager of Metal & Thermit, has been appointed assistant sales manager of the corporation.

Dr. Joseph Robitschek has been engaged by the United States Stoneware Company to take charge of its ceramic research program. He will make his headquarters at Tallmadge, O.

H. G. Hymer, for the past five years associated as mining engineer with General Chemical Co. in N. Y. City has resigned from that concern to become a senior evaluation engineer for the Reconstruction Finance Corp. in Washington.

General Dyestuff Corp., N. Y. City, has granted leaves of absence to five employees who are now serving with the armed forces. On the list are: **William G. Luqueer,** now on duty as a Captain in the United States Army; **Raymond J. Carey,** now on duty as a First Lieutenant in the Chemical Warfare Reserves; **Carl A. Bergman,** now on duty at a Naval Medical Supply Depot of the United States Navy; **Roy J. Ziegler,** now on duty at an arsenal in Maryland; **George Brownlee, Jr.,** now on duty at sea with the Naval Air Corps.

Harry E. Nordin, Jr., well known in dry cleaning supply circles, has joined the field technical force of the Dicalite Co. He will cover the Eastern and Northeastern territory out of New York.

Virgil Tweedie has recently joined the research staff of Commercial Solvents at Terre Haute, Ind.

Earl B. Busenberg, chief chemist of the Philadelphia Rubber Works Co., reclaim division of B. F. Goodrich Company, has been loaned to the government to serve on the staff of technical consultants assisting **William M.** Jeffers, U. S. rubber director.

Reichhold Chemicals, Inc., Detroit, Mich., announces the following appointments to its offices and laboratories:

Dr. C. A. Murray, formerly associated with the Central Soya Company, Inc. and the Jackson laboratory of DuPont, is now refining oils for RCI.

Arthur C. Lansing is specializing in alcohol and fermentation processes at Reichhold.

Clinton A. Braidwood, formerly with U. S. Rubber is now engaged exclusively in synthetic rubber research and production.

Charles J. Windsor, for many years in business as owner of the Windsor Products Co., is now the head of Reichhold's Chemical Control Division at the Detroit plant.

Charles B. Breedlove, recently graduated from Purdue University in Chemical Engineering, is now working in Reichhold's sales service laboratory.

Archa Yancy has been made assistant to Reichhold's treasurer, **Fred Grosius.**

Otto N. Frankfurter, for the past 15 months Consultant and Lend-Lease Purchasing Officer for the Treasury Department, Procurement Division, Washington, D. C., has joined the Heyden Chemical Corp., N. Y. City, in the capacity of Manager of Exports.

George E. Prime, Plant Superintendent at Warwick Chemical Co., West Warwick, R. I., for the past three years, recently received his appointment as Lieutenant, J. G. in the United States Naval Reserve.

Joseph D. Surmatis has recently joined the research staff of Gustavus J. Esselen, Inc. in Boston. Prior to joining the Esselen organization, Surmatis had been, for the past two years, instructor in chemistry at the Pennsylvania State College and Assistant to **Dean F. C. Whitmore.**

Dr. H. N. Brocklesby, one of the world's foremost authorities on marine oils and vitamins, has been appointed to the scientific staff of the Special Products Division of the Borden Co.

Hercules Powder Co. recently announced the transfer of two men to its Hercules, Calif. plant—**G. F. Hogg,** manager of the Chicago office's Naval Stores Department, and **Robert L. Skov,** San Francisco representative for the Naval Stores, Synthetics, and Cellulose Products Departments, effective Nov. 1. **L. P. Killilea,** a Naval Stores Department salesman attached to the New York City office, will replace Mr. Hogg as acting manager in Chicago. Mr. Skov has been transferred to the Engineering Department at Hercules, Calif. He has been replaced for the duration by **David M. Houston,** assistant director, Export Department, Wilmington, Del.

Keystone Carbon Co., Saint Marys, Pa., announces the appointment of **George B. Shaw** as sales engineer.

K. R. Van Tassel has been appointed manager of sales of the newly formed Integral-horsepower Motor Section of the General Electric Co.'s Motor Division, it was announced recently by **W. H. Henry,** manager of the Motor Division, Industrial Department. **D. A. Yates,** of the same division, has been placed in charge of the Lynn Motor Group at G-E's Lynn, Mass., plant.

Lalor Appointments

The appointments to fellowships under the Sixth Annual Series of Fellowship Awards of The Lalor Foundation, which covers the Academic Year 1942-43, were announced recently. They are: A. Calvin Bratton from the University of Texas to work with Professor E. K. Marshall at Johns Hopkins University Medical School; Edward H. Frieden from the University of California to work with Professor Roger J. Williams at The University of Texas; Francis J. Reithel from the University of Oregon to work with Professor Edward A. Doisy at St. Louis University School of Medicine; and James R. Weisiger from Johns Hopkins University to work with Professor A. Baird Hastings at Harvard University Medical School.

The work of these men is in fields closely associated with problems related to the war.

Owing to the war conditions, appointments to the five remaining fellowships originally scheduled for the 1942-43 series have been postponed.

Scrap Film

National Association of Manufacturers has prepared a 20-minute sound slide-film entitled, "Let's Get in the Scrap," to aid the scrap salvage program of the Industrial Salvage Section of the War Production Board. The film is available for immediate use at $5.00 a copy. Address of the association is 14 West 49 st., N. Y. City.

CHEMICAL SPECIALTY COMPANY NEWS

Package Revision

THE proposed revision of Simplified Practice Recommendation R41-40, Package Sizes for Agricultural Insecticides and Fungicides, has been accorded the required degree of acceptance by the industry, and became effective Nov. 1, 1942.

As originally promulgated in 1926, the recommendation established a simplified schedule of package sizes for certain chemicals. The first revision, which became effective in 1938, embodied changes in package sizes, and amplified the schedule to include standard packaging for basic lead arsenate. In November 1939, the manufacturers submitted a second revision, further enlarging the scope of the recommendation to include packages for nicotine sulfate. This second revision was made effective August 1, 1940.

The current (third) revision, which has been approved by a large majority of the manufacturers as well as a representative group of distributors and users of agricultural insecticides and fungicides, consists primarily in the substitution of fiber containers to conserve metal, and in the elimination of several types of packages. Also, a simplified schedule of recommended standard packages for dry lime sulfur has been included in this revised simplified practice recommendation which will now be identified as R41-42.

Until printed copies are available, mimeographed copies of this simplified practice recommendation R41-42 may be obtained without charge from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

Explains Poor Results

Poor results obtained with luminescent or "blackout" paints in early experiments in this country were partially due to the fact that proper precautions were not taken to prevent excessive settling or caking of the luminescent pigment, according to Francis J. Licata, chief chemist of the Metasap Chemical Company, a subsidiary of National Oil Products Co., of Harrison, N. J.

Luminescent pigments cannot be ground without impairing their efficiency, Mr. Licata pointed out. As a consequence, these pigments are usually coarser in texture than pigments ordinarily used in protective coatings. This particular characteristic tends to bring about excessive settling or caking of the pigment in the bottom of the container in storage, unless proper precautions are taken.

In tests conducted in the laboratory and in sample batches in pilot plants, a product was developed as a pigment suspension agent, which proved very successful, Mr. Licata contended.

"We found that very good results were obtained when we mixed necessary amounts of this agent with the thinner while cold, then heated to about 180 to 200 degrees Fahrenheit in a steam jacketed kettle until dissolved, and then added pigment and vehicle."

The product is ideal for use in suspension of luminescent pigment because it may be used in high concentrations and because of its ability to form thick, supporting gels, Mr. Licata said.

NAIDM Meets Dec. 7

The 29th Annual Meeting of the National Association of Insecticide & Disinfectant Manufacturers will be held at the Hotel Roosevelt, N. Y. City, Dec. 7 and 8.

The war program and its effect on our members, raw material problems, container problems, and other matters having to do with the present emergency situation will make up practically the entire program.

Program of speakers is in charge of H. W. Hamilton, Secretary of the Association, and will be announced in the course of the next few weeks. In the meantime, it is suggested that plans to attend and hotel reservations be made at the earliest possible date.

New Dye Booklets

Bernard Color and Chemical Corp. announces the publication of two new handbooks of interest to the dyeing and finishing trade. They will make valuable additions to any textile library.

Bernamine Colors on Piece Goods. A twenty-one page booklet with eighty Bernamine colors illustrated on cotton piece goods accompanied by wool-warp cotton filling combination cloth illustrating union effects. Floaters of silk, acetate rayon, viscose rayon are also illustrated. Fastness properties are tabulated together with descriptive matter. One chapter is devoted to dyeing of new types of combination fabrics. Another chapter deals with the causes for faulty dyeing and methods of overcoming them.

Logwood and Related Natural Dyes. A second printing of a thirty-seven page booklet designed as a handbook of valuable information for the users of Logwood and other natural dyes. Chemical and historical backgrounds are discussed. Practical methods of application on wool, cotton, silk, nylon, aralac, leather, paper, bone, wood, and numerous other items are given.

Copies are available free of charge upon request on firm letterheads.

Rasmussen Elected

Sidney C. Rasmussen, vice-president of General Paint Corp., Portland, Ore., division, has been elected president of the corporation succeeding the late J. C. Mullins.

New Rare Appointments

In line with a greatly expanded advertising, research and promotional program now being formulated, two new appointments to important posts in the organization were announced recently by Erwin T. Fritzsching, vice-president and manager of Rare Chemicals, Inc., of Flemington, N. J.

Adam Piret, formerly advertising manager of Winthrop Chemical Company, of New York, was named advertising and sales promotional manager, while Erik K. Pfau was appointed sales and export manager. Mr. Pfau, who has had considerable sales experience in the drug and pharmaceutical field in Latin America, will be in complete charge of distribution and sales.

Rare Chemicals, Inc., was acquired recently by the National Oil Products Company, of Harrison, N. J., chemical manufacturers. It is being operated as a wholly-owned subsidiary with Charles P. Gulick, president and chairman of the board of the parent firm, serving as president, Mr. Fritzsching as vice-president and manager; Ralph Wechsler as treasurer and A. A. Vetter as secretary. Mr. Wechsler is the officer of the parent company in charge of operations of Rare Chemicals, Inc.

Hilo Convention

A three-day convention of salesmen of the Hilo Varnish Corp., Brooklyn, N. Y., was held Oct. 19, 20 and 21 with an attendance of both trade and industrial salesmen. Industrial meetings were conducted by Carl J. Schumann, president, and by Joseph J. Mattiello, industrial sales manager. Trade sales meetings were conducted by A. G. Schumann, vice-president, and A. Craig, trade sales manager.

Prepared Monthly by U. S. Industrial Chemicals, Inc.

U.S.I. CHEMICAL NEWS

November ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1942

Two Puerto Rican Plants Yield New Essential Oils

Usefulness Foreseen in Soaps And in Cosmetic Preparations

SAN JUAN, P.R. — Two plants growing in Puerto Rico are regarded as offering interesting possibilities as sources of essential oils that may be useful in soaps and cosmetic preparations.

The oregano shrub yields an oil which is said to resemble marjoram. The oil is greenish in color, with a strong spicy aroma, and is reported to contain 52% phenols, with no aldehydes or ketones. It is soluble in 80% alcohol. Suggested applications include shaving lotions, hair lotions, and soaps.

The second plant — guayabacon — yields an oil described as having an aroma resembling a combination of the oils of bay, clove, eucalyptus, and pimenta. As originally distilled, the oil is pale yellow, but it turns green on standing. Composition is described as 78.5% cineole, 5% phenols (principally eugenol), 10% aldehydes and ketones, and possibly a trace of menthol.

Foundry Patterns Altered Or Repaired with Plastic

ARLINGTON, N. J. — Wood and metal foundry patterns can be repaired or altered with the aid of a plastic material previously used chiefly to strengthen box toes in shoes, it is claimed by a manufacturer here.

A piece of the plastic is cut to the desired shape and wet with a solvent, after which it can be readily molded to the form required. When dry, it is said to have a hard, even surface which can be lightly sanded and shellacked. It is believed that use of the plastic may permit the salvaging of many damaged patterns and facilitate alterations.

Plastic-repaired patterns are reported to have demonstrated their effectiveness in actual foundry practice.

Full Replacement of Acacia By Pectin Thought Possible

KNOXVILLE, Tenn. — Broader utility for pectin as a means of replacing acacia in such preparations as mineral oil emulsions is foreseen as a result of studies recently reported here. Earlier research had indicated that approximately half of the acacia could be replaced by pectin, (See U.S.I. ALCOHOL NEWS, May, 1942.)

It now appears that permanent emulsions of mineral oil can be prepared, in which the acacia is entirely replaced by pectin, provided suitable precautions are observed. A typical emulsion has these proportions:

Liquid petrolatum	50 cc.
Pectin	1 gm.
Syrup	10 cc.
Vanillin	0.004 gm.
Alcohol	6 cc.
Distilled water	34 cc.

New Listing Issued on Surface-Active Agents

WASHINGTON, D. C. — A new compilation of surface-active compounds, recently completed here, gives comprehensive data on these materials from the standpoint of their interest to the manufacturers of cosmetics and pharmaceuticals.

Compounds of this general classification are extensively used as wetting, dispersing, and emulsifying agents, penetrants, detergents, and preservatives. The new listing gives the trade names and description of a large number of such compounds, while other sections indicate suggested uses and the chemical types of the compounds.

Copies of the complete 60-page report are available at a cost of 50 cents each. U.S.I. will gladly refer readers to a source from which they may be obtained.

Ethyl Acetoacetate Can be Alkylated by Tertiary Butyl Group

DURHAM, N. C.—The tertiary butyl group can be successfully introduced into ethyl acetoacetate by the aid of boron trifluoride, it has been discovered here. Following other experiments on the introduction of alkyl groups into ethyl acetoacetate, it has now been found that this compound can be alkylated by tertiary butyl alcohol or tertiary butyl ethyl ether. This reaction is described as being of special interest in view of the recognized difficulties in introducing tertiary alkyl groups into active methylenic compounds.

In a typical procedure, a mixture of 0.5 mole of tertiary butyl alcohol and 0.5 mole of ethyl acetoacetate was saturated with boron trifluoride at 0°, and allowed to stand for 6 hours at room temperature. A 14% yield of alkylated beta-keto ester was obtained. An ester-alcohol exchange apparently occurred, the product analyzing for tertiary butyl alpha-tertiary-butylacetoacetate. This product, on ketonic hydrolysis, yielded methyl neopentyl ketone, which was identified as the semicarbazone and 2,4-dinitrophenylhydrazone.

Ethyl Oxalacetate Can be Prepared by Simple Procedure

Sodium Derivative, Produced by U.S.I., Used as Starting Point

Ethyl oxalacetate — extensively used as an intermediate in dyestuff and pharmaceutical manufacture, can be prepared from ethyl sodium oxalacetate by a simple procedure described by a reader of U.S.I. CHEMICAL NEWS. The ethyl sodium oxalacetate is first suspended in ether, and dilute sulfuric acid is added after cooling the mixture. The remainder of the procedure follows conventional lines, using a low vacuum pump.

Stability of Sodium Salt

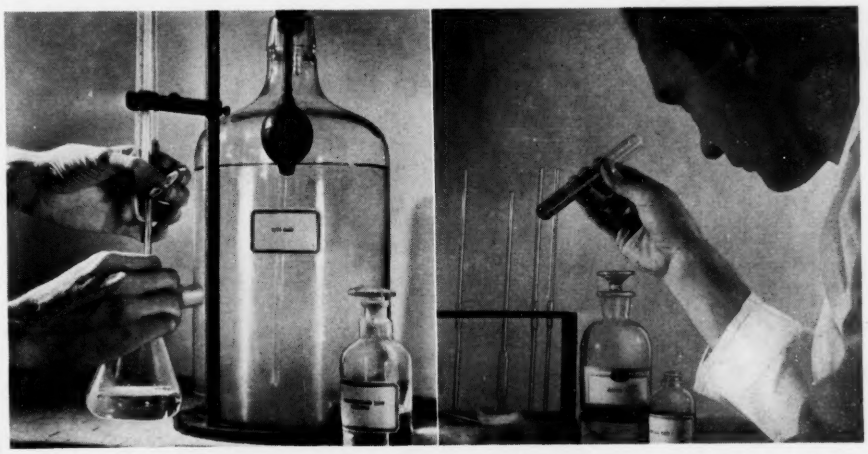
While chemists have long recognized the interesting possibilities of ethyl oxalacetate in organic synthesis, exploitation of its usefulness was at first hampered by its relative instability. This difficulty was overcome by U.S.I.'s production of the sodium derivative, which has a considerably higher degree of stability. The sodium derivative can be used for most of the purposes for which ethyl oxalacetate itself is suitable. In cases where the

(Continued on next page)

Ethyl Formate Increases Yield of Diethylmercury

In the preparation of diethylmercury from ethyl iodide and sodium amalgam, yields are increased about 50% when ethyl formate is used as the solvent instead of ethyl acetate, it has been reported as a result of recent studies. Similar increases in yield were observed when acetone is used as the solvent.

In preparing dimethylmercury by a similar procedure from methyl iodide, the opposite result was obtained. In this case, studies appeared to confirm the usefulness of the customarily used ethyl acetate, since ethyl formate or acetone decreased the yield.



U.S.I. Pure Alcohol is subjected to rigid tests to assure conformity with U.S.P. standards. At left is shown the titration step in a test to determine freedom from acidity. Photo at right shows examination of a sample to assure its freedom from alkaloids.

November ★ **U.S.I. CHEMICAL NEWS** ★ 1942

Specific Gravity Tests On Petroleum Oils Made By Falling Drop Method

EL DORADO, Ark. — The falling drop method of densimetry offers a rapid, convenient, and accurate method of determining the specific gravity of petroleum oils, it has been discovered by a research worker here.

The procedure, which consists essentially in timing the fall of a drop of known size through a liquid immiscible with it, has been employed for a number of years in clinical techniques for determining the specific gravity of body fluids. Its adaption to the investigation of petroleum oils presages a far wider field of usefulness.

Range and Accuracy

In the petroleum oil tests, the liquid through which the drop falls is a solution of ethanol and distilled water. The percentage of ethanol by volume ranges from 45 to 98%, depending on the specific gravity range in which the test specimen is expected to fall. With these percentages of ethanol, specific gravities can be determined over the range from 0.836 to 0.993 at 25°/25°C.

Accuracy of the method is expected to be within ±0.0010 unit of specific gravity. A particular advantage of the method is that only a few drops of oil are required for the determination, thus making it adaptable to the small volumes sometimes obtained in analytical distillations or extractions.

Ethyl Oxalacetate Made From Sodium Derivative

(Continued from preceding page)

pure ester is desirable, however, the procedure outlined provides a simple means of preparing it as needed, while still benefiting by the greater stability of the sodium derivative during storage periods.

Use in Analysis

A number of the more important applications of ethyl oxalacetate and its sodium derivative were outlined in the July, 1942, issue of U.S.I. Chemical News, copies of which are available on request. A novel use in analytical procedures has recently come to light. When ethyl oxalacetate is dissolved in acetic anhydride, a brilliant blue color results in the presence of a trace of alkaline substance, such as sodium acetate, strychnine, nicotine, etc.

New Chemical Products For Crime Detection

Progress in the science of criminological investigation is expected to be facilitated by the development of new chemical materials undergoing formulation at the McDaniel Laboratories.

These new forensic chemicals, under the trade name of Scotland Yard Inspector, have been developed by J. Frank McDaniel, formerly attached to New Scotland Yard and the French Sureté through the U. S. Intelligence Department. In addition to their usefulness in crime detection, these materials are of interest as an outlet for some of the products of the chemical industry.

Among these new materials is a developer for latent fingerprints, described as having special affinity for the chemical constituents of perspiration and bodily secretions: butyric acid, formic acid, acetic acid, phosphorus, and sodium chloride. The impressions, according to Mr. McDaniel, may be developed in colored backgrounds for lifting on dactyloscopic foil, examination by ultra-violet ray and orthochromatic photography, or may be fixed permanently on the object touched by the fingers.

Another device is a fuming apparatus for developing fingerprints on greasy surfaces, blotters, and fabrics, by automatically absorbing moisture from the material, a fresh supply of chemicals being replaced in paper cartridge form.

Other new products include an inkless system for the registration of fingerprints, which may be of interest in registering of female employees; and materials for fluorescent analysis under ultra-violet light of inks, papers, erasures, bloodstains, traces of bodily secretions, ballistics, etc.

Describe Determination of Thiamine in Pharmaceuticals

CHICAGO, Ill. — A new procedure for the assay of thiamine in pharmaceuticals has been described here. The technique involves the formation of a colored compound when the vitamin is reacted with diazotized ethyl para-aminobenzoate. The color can then be extracted by means of isoamyl alcohol for comparison in a photometer.

It is reported that this procedure has been successfully applied in the determination of thiamine in a wide variety of products.

TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

A new metal cleaner is described as suitable for use on all kinds of metal. It is said to coat the metal with an invisible oil film which affords protection during storage. Material can be used alone or diluted with water or kerosene. **(No. 630)**

U S I

A paper base plastic is said to have exceptionally high tensile strength, comparing favorably in this respect with aluminum on a weight basis. Plastic is also highly resistant to moisture and scratching, remains stable at high and low temperatures, and has a smooth surface that eliminates the need for special finishes, according to the manufacturer. **(No. 631)**

U S I

A wrapping material is described as especially useful for the protection of metal parts. It is said to be moisture-proof and resistant to oils and acids, and to aid in retarding oxidation and rusting. **(No. 632)**

U S I

Concrete repairs can be easily made with a new compound that has high compressive strength and extreme resiliency, according to the manufacturer. It is said that the compound can be applied without chipping and cutting out of the old surface, and that it will stand up under heavy loads. **(No. 633)**

U S I

An oil-absorbent compound is described as having many advantages for floor cleaning. According to the maker, it is more effective than wood shavings, reduces slip hazard, is odorless and dustless, can be reused, and will not burn when oil-soaked. **(No. 634)**

U S I

Two new titanium pigments of the rutile type have been placed on the market. Maker reports that they have high opacity and are non-chalking, and suggests their use in camouflage paints and war finishes for equipment that must stand exterior exposure. **(No. 635)**

U S I

A fast-drying linseed oil is said to have the advantage of quick bodying, and to be suitable for use in paint, varnish, ink, leather finishes, oilcloth, and linoleum. **(No. 636)**

U S I

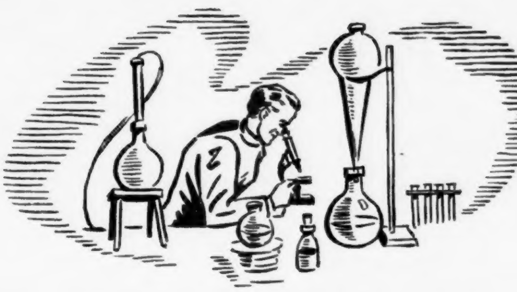
Concentrated peppermint oil will soon be placed on the market as a possible substitute for menthol crystals and synthetic menthol. It is said that the material is produced by fractional redistillation of natural peppermint oil to remove a large percentage of the non-menthol constituents. **(No. 637)**

U S I

Frosting of Lucite, to produce lettering or ornamental designs, can be readily carried out by means of a simple process involving the use of ethanol, it is claimed in a recent patent. **(No. 638)**

U S I

A moisture remover is intended to allow only dry air to enter oil or chemical storage tanks when the level of the liquid drops, thus helping to prevent absorption of moisture by the liquid. Special types are said to be available for transformers and other equipment in which the presence of moisture is harmful. **(No. 639)**



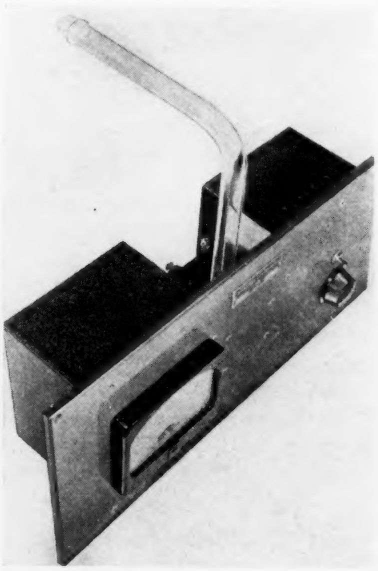
THE LABORATORY NOTEBOOK

New Colorimeter

A new Lumetron Colorimeter Model 400-S has been designed by the Photovolt Corp. to register the light transmission of a liquid passing continuously through the instrument.

The operating principle of the instrument is similar to the one of the usual type of photoelectric colorimeters: The light of an incandescent lamp passes through a color filter and through the liquid. Then, it impinges upon a barrier-layer photocell the current of which is registered by an electrical indicating instrument.

The distinctive feature of the Continuous-Flow Colorimeter, according to the company, lies in the liquid under test passing through a glass tube rather than being contained in an absorption cell or a test tube. This makes the instrument suitable for the continuous control of chemical processes in which the color or turbidity of a liquid must be checked either as a measure of its concentration or as an indication of some other chemical or physical condition. Once calibrated by means of a solution of known concentration, the instrument indicates the concentration directly and continuously, obviating the necessity of taking samples and analyzing them at regular intervals.



The instrument is designed to be mounted on a panel or control board. The instrument panel carries, on its front side, the electrical indicating instrument, an on-and-off switch for the lamp, and a control knob for the purpose of standardizing.

The light of a 50 Watt incandescent lamp is collimated by a condensing lens system. It passes through the glass tube and through a color filter before striking the photocell.

The circuit comprising photocell and indicating instrument is designed to give linear response. The photocell has unlimited life and is not subject to any wear whatsoever.

The sensitive indicating instrument is provided with knife-edge pointer and mirror to prevent parallax errors. The dial carries a scale indicating transmission in per cent and a density scale which, in most instances, gives readings that are directly proportionate to concentration.

The choice of the filter depends upon the color of the solution under test. The instrument has ample sensitivity for the use of highly selective color filters isolating narrow spectral bands. The filter can be exchanged after removing the steel casing.

A constant voltage transformer is furnished with the instrument so as to obtain constant light output of the lamp even if the line voltage fluctuates. The instrument is sturdily built and protected from dirt and dust so as to stand up under continuous service conditions in the plant.

The method of operation depends largely upon the purpose to be accomplished. If the instrument is installed to register the concentration of a solution, water or the solvent will mostly be used for standardization. With the solvent in the tube, the control knob of the instrument is adjusted until the needle indicates zero density (100 per cent transmission). Next, the tube is filled with a solution of known concentration and the density reading is noted.

If the solution follows Beer's law, the density readings obtained in actual operation are directly proportionate to concentration.

Packaging and Containers

(Continued from page 734)

Bags sewn on bag closing machines are usually opened by cutting the stitching with a knife and frequently the cloth is damaged. The possibility of injuries of this nature to bags is eliminated when the Rip-Cord Closure is used.

Trucks loaded with Rip-Cord closed bags carry two more bags per trip, company says, than when loaded with tied bags. Saves loading and unloading time.

The supply of cotton and burlap bags must be conserved in the interest of our war effort. The Rip-Cord Closure makes it possible to get extra trips from every bag. This and the other advantages makes the Bemis Rip-Cord Closure particularly appropriate as a wartime measure.

L-197 Amended

The following clarifying amendment has been issued to Drum Limitation order L-197 on Oct. 23rd.

Amendment 2 of Limitation Order L-197

Section 3061.1. Limitation Order L-197 is hereby amended in the following particulars:

1. Paragraph (a) is amended by adding the following subparagraphs:

(5) "Used drum" means a drum which has been partially or wholly filled with any product or commodity for storage or shipping purposes in the course of business.

(6) "New drum" means any drum which is not a used drum.

(Continued on page 758)

FOREIGN LITERATURE DIGEST

By T. E. R. Singer

REVISTA BRASILEIRA DE QUIMICA (Ciencia e Industria) (Brazilian Review of Chemistry (Science and Industry)) Vol. XIV, No. 79 (July 1942) pp. 23-28.

A very detailed report on decolorizing clays and their activity was made by Y. E. Stourdze before the National Chemical Congress of the Chemical Association of Brazil.

Acidity of the Decolorizing Clays and its Importance: A table is given showing the acidity of various natural decolorizing clays, the experiments being carried out with 2 g. of clay in 100 g. of water, and using N/10 soda and phenolphthalein for the titration:

	N/10 Soda No. of cc.
English fuller's earth	1.2
American fuller's earth	1.0
English fuller's earth	0.9
American fuller's earth	1.2
English fuller's earth	1.0
American fuller's earth	0.7
American fuller's earth	0.5
German white clay	0.7
German decolorizing clay	1.5

Activated clays are always acid due to the chemical treatment they undergo. In treating edible oils the acid clay imparts some of its acidity to the oil which can modify certain of its properties, particularly when the oil contains traces of soap. Soap traces react with the acid to liberate fatty acids. Excessive acidity may also attack the filter cloth. In treating edible oils the clay should therefore consume a maximum of 5 to 10 cc. of N/10 caustic soda per 50 g. of clay.

Clays with relatively high acidity are preferred to neutral clays in treating mineral oils and industrial fats. For the latter the clay should consume up to 15 cc. of N/10 caustic soda per 50 g. of clay.

Manipulation of Decolorizing Clays: The method of adding the clay to the oil is discussed. It is important that the clay have good filtering properties, which depend upon the granulation of the clay, its coagulating properties (which can cause obstruction of the pores), and on the condition of the oil which may contain impurities that clog the pores of the clay. The clay should not retain the oil, it should have a certain degree of humidity, and it should not have any chemical action on the oil. No taste or smell should be imparted to the oil by the clay. The granulated clay should be of a certain hardness and should not be so fine that it clogs the filter cloth or passes through it.

Refining with Alkalis and Acids before Clarification: Before being treated with clays the oils must be purified to a certain extent. Free fatty acids are removed with soda, for example. This treatment also removes the albuminous and mucilaginous constituents, as well as a considerable portion of the staining ingredients. It is not sufficient, however, to give the desired color to the oil.

In certain cases the oil is first treated with sulfuric acid and then decolorizing agents. Refinement with alkalis and acids has the following disadvantages: loss of oil on separation from its impurities and, frequently, changes in the chemical composition of the glycerides.

The staining constituents in the oil are derived from the fruit or seed during the extraction of the oil. These substances are of similar chemical composition and are characterized by their intense staining power, that is, small quantities of them can color large quantities of oil. The carotenoids, existing in large quantities in cotton seed oil, linseed oil, corn, soya and palm oils, are resistent to alkalis but sensitive to oxygen. The xanthophylls and chlorophylls, found in olive oil, are decomposed by alkalis. There are also other types which must be dealt with. The removal of fixed colors is very difficult and that is the role of the adsorbents.

It has been found that Fuller's earth and the activated clays retain the red staining constituents well whereas carbons are better for yellow and blue stains.

There are a number of factors which are disadvantageous to the decolorizing process, such as excess humidity, acidity, soaps, the action of light, air, fermentation, aging, the origin of the seeds, etc.

Measurement of the Decolorizing Power of a Given Clay: Cottonseed oil is generally used as a test oil to determine the decolorizing capacity of a clay, since it has two great advantages: 1) it can be decolorized by natural clays such as Fuller's earth; 2) its predominant color is red for which the clay has a special affinity. Cotton seed oil does have a disadvantage, however, in that it changes readily so that an additional test must be made to determine whether or not a change has occurred. The final color of the oil is measured with a colorimeter and compared with its color before clarification.

The laboratory technique is given for measuring the color of the oil, clarification by contact, measurement of the retention of oil, measurement of the acidity of the clay, and the measurement of the size of the clay particles.

There is a description of the physical and chemical tests applied to natural and activated clays used in the United States, including the determination of the various properties, method of activation, and bleaching.

Brazilian Fuller's earth: Fuller's earth is produced on a small scale in Brazil since this industry had been introduced into the country only recently. No large deposits of this earth have yet been discovered, and little work has been done on the activated clays.

There are several deposits of Fuller's earth in Sao Paulo, exploited by several firms.

Cia Argilas Industriais, Ltd., produces four types of Fuller's earth. This company has two installations, one furnace with a capacity of 8 tons per 24 hrs., and the other with a capacity of 16 tons. The company of Agostinho Barcelos has an installation with a capacity of 6 tons per 8 hours. Five purchasing firms are also listed.

The report also gives considerable information on the decolorizing power of Sao Paulo clays and the properties of clays from other sections of Brazil. Since this country is so rich in vegetable oils, the development of the decolorizing clay industry is of particular importance and interest.

Packaging and Containers

(*Continued from page 757*)

2. Paragraph (c) (2) is amended to read as follows:

(2) On and after September 14. 1942, no person shall sell any new drum or deliver such drum pursuant to a sale thereof, and on and after November 7, 1942, no person shall sell any drum, new or used, or deliver same pursuant to a sale thereof (regardless of when the manufacture of any such drum was completed), unless such drum shall be plainly and legibly marked on the bottom plate with the letter X.

3. The first sentence of paragraph (c) (4) is amended to read as follows:

No person shall pack any of the following products:

(i) In a drum or drums, new or used, which was manufactured on or after September 14, 1942.

(ii) In a drum or drums, new or used, which was purchased by or delivered to any person on or after September 14, 1942, and at the time of such purchase or delivery was a new drum.

(iii) In drum or drums which was purchased by or delivered to any person on or after the 7th day of November, 1942, and at the time of such purchase or delivery was a used drum.

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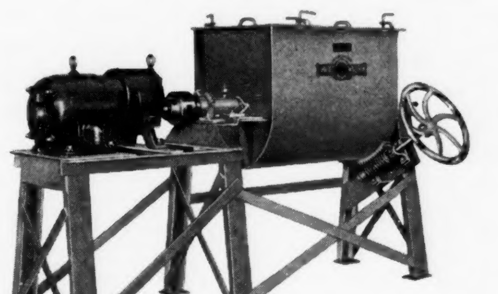

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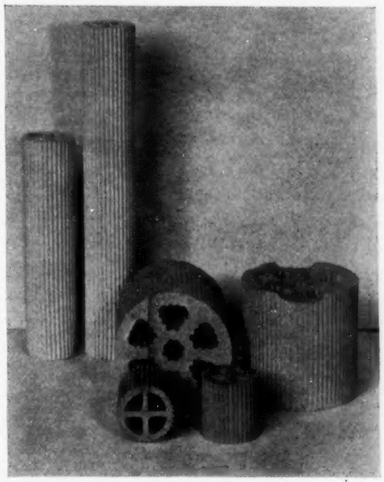

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CANADIAN REVIEW

By Kenneth R. Wilson

OTTAWA—It is just a year now since Canada donned her self-imposed economic strait-jacket and froze all wages, salaries and prices. The fact that the United States has now done likewise is both a tribute to Canada's program and a great relief to this country's economic and fiscal "bosses."

Canada realized from the first that it would be difficult and probably impossible to isolate herself completely from a runaway inflationary spiral in the United States. She gambled on pointing the way, in the belief that if an overall "freeze" could be shown to be practical in this country it might encourage the United States to follow suit. The gamble seems to have worked.

Any possibility of further wavering by President Roosevelt was probably dispelled by the frank and straight-from-the-shoulder talk which he had with the Canadian Price Czar Donald Gordon, when the latter visited Washington recently. Gordon is better qualified than anyone else in the world to talk about the grief and the virtue of an overall ceiling on prices and wages. In his talk with the president he pulled no punches. As a result, Canada enters her second year of overall prices and wage control with the strongest possible support across the border.

K. R. Wilson

Canada's experience shows clearly that an overall ceiling can and does work. Living costs had risen seven per cent in the seven months prior to price control. They were held to within a one per cent rise in the next nine months. In the same nine months period, the United States living costs rose six and one-half per cent despite the partial price ceiling of last Spring. Price Czar Gordon estimates that housewives' bills would have soared ten per cent in Canada had it not been for price control. The saving he places at somewhere between $300 and $350 millions against which the out-of-pocket costs in the form of public subsidy to enable business to operate within the ceiling have been only about $15 millions.

In 12 months of operation, there has been very little "puncturing" of the ceiling except in the case of farm products, (notably wheat and beef) and seasonal goods. Only a few goods or services have been excluded from the ceiling since the policy was originally introduced. The most notable recent exemption has been newspapers, magazines and periodicals, which were removed from the ceiling in August.

Most troublesome problem has been the farmer. Here the job was to maintain a price ceiling and at the same time ensure adequate supplies of foodstuffs for increased home and export demand. In several instances this had to be done by outright subsidy—butter, milk, etc. In other cases (wheat and beef) the price ceiling was openly punctured. The farmer is still the biggest threat to the success of Canada's price ceiling.

Threat is Wages

Another threat is wages. Although Canada froze all wages and salaries except to allow a cost-of-living bonus which rises or falls with each one per cent change in the cost of living, considerable power was left in the hands of wage boards in each of the nine provinces to permit "adjustments" and iron out anomalies in depressed or sub-standard areas or industries. Today, the cumulative effect of these increases is beginning to make itself felt in higher costs. In some cases these now threaten the Price Board's ability to keep the price lid nailed down as tightly as has been the case in the past. These boards have handled over 10,000 cases in recent months the majority of which have come from employers themselves. Chief reasons for the application are:

1. Conversion of low-wage peace time industry to higher wage war production.
2. The wish to overcome wage differences between neighboring centres to keep workers from drifting.
3. The desire of management to change the basis of pay and introduce the incentive system.

Behind these applications (over 4000 of them have come from one province, Ontario) is the significant fact that the old-time differentials between factories and communities are being gradually ironed out and eliminated. It is doubtful if the old differentials will be permitted to return in the post-war period. Certainly many of them will not return.

There have been no general wage increases permitted in Canada during the year. Increases have only been granted where it can be established that prevailing rates are "depressed" or "substandard" in competitive or nearby industry.

One virtue of Canada's price ceiling has been the speed with which Chairman Gordon has "cleared" decisions affecting individual industries or firms. In the first place, individual commodity or group administrators have wide powers in their own fields. Most of them have their headquarters in the heart of the community which they serve usually at Toronto or Montreal. Very few are located in Ottawa. Even two of the "boss" administrators' coordinators who head the key industrial groups (metals, pulp and paper, foods, textiles) are themselves located in Montreal so as to be in closest possible touch with their "field."

Committee to Handle

When problems have to be cleared with Donald Gordon personally, they are handled through a small informal "management" committee which meets with the chairman regularly at 12 o'clock each day. Rulings are given promptly and as a rule, decisively. There is the minimum of "unfinished business" where important decisions affecting business practice or administration are concerned. The full membership of the Wartime Prices and Trade Board meets only on alternate weeks to discuss questions of high policy.

Because Canada's Price Administration has clearly earned its spurs as a tough, efficient, administrative machine, it has now been given an even tougher job to do. Prime Minister King has now handed Donald Gordon the job of putting Canada on "iron rations" for the duration. That means the ruthless and speedy curtailment of non-essential industry above a minimum required to maintain health and morale.

Reason for this is the increasingly tight manpower shortage. Canada's labor "pool" has now completely disappeared and there is an immediate shortage of men in heavy war industry. Already men are being transferred from gold mines and pulp and paper operations to more essential war work. Starting immediately a drastic program of curtailment and concentration is now planned. It is estimated that within 12 to 18 months, one out of every four or five wage earners now in civilian trade or industry will be diverted into an essential war job. In short, manpower has now, in Canada, ousted critical materials, power shortage, transportation, etc., as the Number One Bottleneck to the war.

To say which industries must be closed up or must disgorge manpower, a new Industrial Division of the Prices Board has been named under Robert F. Chisholm,

(Continued on page 765)

INDUSTRY'S BOOKSHELF

COLLECTED PAPERS OF WALLACE HUME CAROTHERS ON HIGH POLYMERIC SUBSTANCES. Edited by H. Mark and G. Stafford Whitby, being Volume I of HIGH POLYMERS, a Series of Monographs on the Chemistry, Physics and Technology of High Polymeric Substances. Interscience Publishers, Inc., New York. xix, 459 pp. diagrams, portrait. $8.50. T. E. R. Singer.

Of recent years a number of series of volumes on special subjects have been published, and with this volume by the late W. H. Carothers on high polymeric substances, we have the start of a new series of monographs on high polymers. As stated in the introduction, Carothers' work divides itself into two distinct series of study devoted to studies on polymerization and ring formation, and acetylene polymers and their derivatives. Part One is concerned essentially with condensation polymers produced by the recurring condensation of long, so-called polyfunctional molecules, at both ends of which are reactive groups capable of reacting, with the elimination of water, with the reactive end groups of other molecules of the same of another type to yield long condensed-polymeric chains, the products being, typically, polyamides, polyesters and polyanhydrides. Part Two is concerned with polymers, in the narrower sense of the term, produced by the self-addition of conjugated systems, especially conjugated butadienoid systems containing chlorine and other substituents.

A short biography of Dr. Carothers by Roger Adams is included.

Industrial Camouflage Manual by Konrad F. Wittmann, A. I. A., Reinhold Publishing Corporation, New York, New York, 128 p., $4.00.

Industrial camouflage as a part of the production defense program is of outstanding significance in the protection of life and industry. Treating this war technique from the engineer's and the artist's points of view, the manual presents the findings of the camouflage laboratory at the Pratt Institute.

Emphasis is placed on the practical "how to do" methods, and the problems and principles of visibility are detailed and solved with the aid of many models, photographs, and diagrammatic sketches.

Washington

(*Continued from page 668*)

ufacture of containers, and even materials not formerly regarded as critical, are becoming increasingly scarce. All industries are being put on notice from Washington to develop usable substitutes. The government, meaning WPB, is not willing to keep the lead, but wants the industries concerned to conduct more active research.

Manufacturers allowed to pack their products in steel drums, for instance, now have until November 7 to acquire title to a supply of used steel drums, where formerly they would not have been allowed to continue to use such containers for certain products, unless they held title to them. The purpose is to halt the practice in some trades of selling their used containers and repurchasing as needed.

In respect to the chemical industry particularly, pressure is being used to encourage use of cheaper containers to replace steel and other critical materials, through suspension of favorable price ceilings on some types, and similar action. After November 14 for instance, use of new or even second-hand steel shipping drums for packing approximately 200 chemical, petroleum and other products, is barred by Limitation Order L-197; some 90 important chemical products are affected, and will in many instances, have to resort to other containers.

Moreover, use of tinplate for packing pyrethrum and rotenone base insecticides is now barred by M-81 (Tin Conservation) and packers of these products have been asked to use blackplate or glass.

Rigid restrictions have been forecast for cosmetics packaging, also, from the Chemicals Branch. The past month has seen growing emphasis on the whole problem of containers, with a number of changes recorded in the Containers Branch to promote closer study.

Last minute actions at WPB as this was written include postponement to January 1, the effective date of scheduling production and delivery under M-154 (Thermoplastics). The order will continue to operate as in the past. The scheduling provision, requiring producers of raw material to schedule their deliveries, requires some time for setting up procedure, and was the reason for the amendment, No. 4, deferring the effective date of this phase of the order. The original effective date was November 1.

The Office of Price Administration has cautioned importers of cresylic acid of British origin that they may recover only 3 per cent commission on their transaction rather than the 5 per cent recently allowed However, an amendment is forthcoming in the near future which will allow importers to include the 5 per cent commission in their charges, as this is the commission allowed in England.

In line with increasing pressure for rubber production, the OPA has freed from price control all furfural, sold or delivered for use in manufacturing synthetic rubber, of which it is an important ingredient. It is distilled from wood, bran, corncobs, etc., so that its basic ingredients in turn, present a small problem.

Controlled Materials Plan

In line with the sweeping change now under way in allocation procedure, under the Controlled Materials Plan, recently announced, all industry branches are to be considerably bolstered to meet increased demands on them. While the branches will not be responsible for policy, planning, coordination or supervision phases of WPB operations, they will assume many functions now directly under the Director General for Operations. Priority control however will remain in its present hands. The branches will be responsible for such operating phases as execution of programs and such policies and procedures established for the resources assigned to these branches. The branches will retain connection with their respective industries through the industry advisory committees assigned to these branches, and the various agencies concerned—Army, Navy, Office of Civilian Supply, etc., will be permanently represented on each branch. Labor representation also will be provided, it is stated.

Last Minute News

Last-minute actions at Washington included the following, as this was prepared;

Elimination of individual salary reports on company officers and employees receiving $20,000 and upward, from financial reporting forms filed with OPA; on January 1, a new provision becomes operative to allow reporting separately charges set up to provide wartime reserves.

Initiation of a government program for purchase and importation of rotenone from Brazil and Peru, up to 4½ million pounds in coming 12 months;

Studies under way to provide for possible new plant on Pacific Coast to make butadiene from alcohol from wineries in that section. Chemical Branch is making this study;

Complete allocation control ordered for paraphenyl-phenol resins (M-254);

Corn oil, cottonseed oil, peanut and sunflower seed oils, added to list which Commodity Credit Corporation will consider for purchase;

Steatite talc restricted to four essential uses in order M-239;

Military exemptions from restrictions on deliveries of chemical cotton pulp eliminated by amendment to conservation order M-157.

MARKETS IN REVIEW

By Paul B. Slawter, Jr.

Heavy Chemicals — Fine Chemicals — Coal Tar Chemicals — Raw Materials — Agricultural Chemicals — Pigments and Solvents

CHEMICALS are finding many war jobs. In some cases, even the "experts" have been surprised at the versatility and adaptability of the chemical industry. In support of that, the War Manpower Commission last month recognized the chemical industry as an activity essential to the support of the war effort and has released a list of considerable magnitude showing the critical occupations in the production of chemicals and allied products. Draft boards were asked to keep "hands off" these employees.

Du Pont is currently displaying in Atlantic City a number of chemical products which illustrate some of the uses for chemicals in this war—a plastic bomber nose made from methyl methacrylate resin, a nylon parachute, and Army field rations wrapped in cellophane, dyes for uniforms far superior to those used in the first World War, plant hormones which promote the growth of larger fruits, better qualities, etc., faster-drying paints and improved methods of application, expanding use of dynamite in industrial applications raw materials from agriculture, etc. These are only a few of them. How many war chemicals have you been handling? What are YOU doing to help win the war?

Heavy Chemicals: If the shipping conditions are favorable, there's quite a bit of caustic soda and soda ash wanted in South America we hear. Both chemicals can now be exported under general license. Here in this country there is increased demand for alkalies on the part of the glass container industry. From every indication, the tremendous shift to glass containers will continue. Makers of industrial chemicals are noticing now the absence of orders from the so-called "normal" users. Demands for the war industries, however, are terrific but most of the bulk business is in the mixed acids, sulfuric, alkalies, chlorine, carbon tetrachloride, ammonia and nitrogen products. Calcium chloride is beginning to move out again in large quantities as the highway departments are making preparations for cold weather. Consumption will certainly be greater than it was last year. The armed forces use the stuff, too, you know. You could sell a lot of copper sulfate for export if you could get the licenses cleared. There seem to be plenty of potash salts to meet all requirements. Acetic acid is moving in good quantities although some of the boys have expressed the wish that they had more of the glacial on hand. Phosphates, it seems, are due for some busy selling.

Fine Chemicals: Methanol producers are making moderate deliveries to the anti-freeze makers but the bulk of production is going into the manufacture of formaldehyde for war plastics and synthetic resins. Citric acid and the full line of citrates are extremely hard to get. Increasing quantities of phenol are being diverted into the manufacture of war materials. Salicylates are practically impossible to find on the market. Industry can use just about all the formalde-

hyde, tartar emetic, crude camphor, mercury oxides and chemical solvents it can get. There's some hope that the acetone market will be a little easier after deliveries are completed under lend-lease's recent orders. Butyl alcohol, butyl acetate and methyl acetone are scarce. Output of glycerine in 1943 is not expected to continue at its present rate—less fats will be available and no lauric acid content oils. Users of citrates are being obliged to carry on for the rest of the year with less material than before under the new allocation program. One company reported "we hope we can supply for civilian use for November and December, 1942, up to 50% of your purchases for the same months in 1941."

Coal Tar Products: Domestic production of cresylic acid goes right into consumption. There was some imported material on the market recently but it was grabbed up right away. Additional arrivals are expected momentarily. Creosote oil is being sold to the railroads in sizeable amounts due to increased traffic. The dyestuff intermediates market reflects the general tightness of most coal tar products. All available lots of toluol go right into the manufacture of explosives. New coke ovens—to be in operation next year—should increase production of coal tar products considerably but war demands, it is expected, will take everything the industry can put out. Government is makng all possible efforts to conserve benzol supplies in view of the big demand that will come when the synthetic rubber program really gets under way. Distribution of most articles in the coal tar derivative market is under complete allocation.

Natural Raw Materials: Movement of gum turpentine and rosin into government stockpiles is heavy for this time of year. New parity prices on gum turpentine and rosin were announced this month showing an advance of 1.9 cents per gallon on turpentine and 5 cents per 100 pounds on rosin as compared with previous parity levels. The very noticeable decrease in sales of paints, varnishes, lacquers, etc., is reflected in the turpentine demand. It must be remembered in this connection that last Fall there was an almost phenomenal business in this industry. This brought one of the largest volumes of demand for naval stores seen in years, so that comparisons with 1941 business are apt to give one the wrong impression of actual conditions. Rosin continues to hold a stronger position in the market than turpentine. The bulk of the soybean oil to be produced in tidewater linseed mills, it is reported, will go into lend-lease or other Government channels. The Defense Supplies Corp. will purchase stocks of shellac held in the United States. Offers must be received by March 1, 1943, and should be sent to Associated Representatives, 155 John St., N. Y. City. Seedlac or lac which has been bleached, cut or incorporated in protective or technical coatings will not be purchased. Under WPB's M-106, shellac can be used or sold only pursuant to allocation. This restriction does not apply to sales to specified Government agencies and holders of less than 10,000 pounds of shellac on July 31, 1942. Holders of less than one bag of shellac should consult with the Chemical Branch of the WPB before offering their shellac to the DSC. Sellers of refined soybean oil, peanut oil and cottonseed oil for nonedible purposes (industrial) may advance their present ceiling prices under the fats and oils regulation by ½ cent a pound, OPA has ruled.

OPA this month also set specific dollars-and-cents ceilings for imported vegetable waxes produced mainly in Brazil and Northern Mexico and for domestic and imported beeswax. Gypsum is being used to replace lumber in building industry. This is in keeping with conservation orders limiting consumption of strategic materials needed for the war effort and lumber is one of them. There are large surpluses of gypsum in this country.

Fertilizers: American farmers will be able to get most of the fertilizer they need to meet crop production goals next year, Dr. Frank W. Parker of the U. S. Department of Agriculture, told the American Society of Agronomy meeting in St. Louis this month.

Dr. Parker, who is in charge of soil and fertilizer investigations in the Department, indicated there would be a record demand for fertilizers due to the great increase in the farm cash income for 1942. He predicted there would not be enough nitrogen to meet this demand but said there would be enough for essential requirements and to enable American farmers to meet crop production goals. Adequate supplies of both phosphate and potash were predicted.

The somewhat reduced supply of nitrogen fertilizer is the result of great increases in the use of synthetic ammonia for munitions and other war industries. The amount of nitrate of soda that can be imported from Chile is contingent on the ocean shipping situation.

The fertilizer situation has improved somewhat in recent months. The situation, of course, is subject to change due to the war but it now appears that American farmers in 1943 will use more phosphate and potash than they have ever used in any previous year. Nitrogen consumption, despite war conditions, is expected to be higher than in any year prior to 1941.

To aid in making the most efficient use of nitrogen and other plant foods next year the Department cooperated with the War Production Board and the Office of Price Administration to set up the following general principles for developing an equitable plan of fertilizer distribution:

1. Crops most essential to the war effort should have first call on our fertilizer nitrogen supplies.
2. Chemical nitrogen should not be used on non-essential crops, on some essential crops, of which there was a very large surplus in storage, or under conditions where it gives a low return.
3. The consumption of phosphoric acid and potash should be increased to utilize most of our productive capacity and to partially offset the lower yield that would result from reduced nitrogen fertilization
4. With the limitations indicated, nitrogen should be distributed on the basis of past usage.
5. It seems desirable from the standpoint of achieving production goals that nitrogen for agricultural uses be rationed to producers and that this can probably best be done through the same set-up that is now rationing farm machinery.

A committee of state and federal fertilizer specialists cooperated with the War Production Board, Office of Price Administration, and the fertilizer industry early in 1942 to standardize fertilizer grades as an aid in the distribution of fertilizers to farmers. Under this program the number of grades of fertilizer sold in the United States will be reduced from about 900 to 90. The grades per state will be reduced from an average of 88 to 16.

Ceilings Raised

Present price ceilings on fertilizer—frozen at February 16-20, 1942, levels may be raised by approximately eight per cent shortly to cover increased costs of nitrogen and transportation since that base period, the Office of Price Administration announced today.

A new price regulation, effecting this adjustment by fertilizer production areas according to the increased costs in each area, probably will be issued within the next four to five weeks.

The fertilizer industry now is covered by Maximum Price Regulation No. 135 for mixed fertilizer, superphosphate and potash sold at retail; Maximum Price Regulation No. 108 for nitrate of soda, sulfate of ammonia and cyanamide at retail, and the General Maximum Price Regulation, whose March, 1942, ceilings apply to sales of other fertilizers at retail. The General Maximum Price Regulation also covers all wholesale transactions for fertilizers and materials—except sulfate of ammonia. Wholesale prices of the latter are controlled by Maximum Price Regulation No. 205.

Allocation of low-priced sources of chemical nitrogen to war industries subjects the fertilizer industry to additional expense in turning to substitutes, such as oilseed meals, for essential nitrogen. Advance disclosure of the proposed price adjustment is made to encourage fertilizer manufacturers to proceed with mixing operations, using all available sources of nitrogen. Thus, the 1943 output of essential food, feed and fiber crops will not be limited by a fertilizer shortage.

The fertilizer price adjustment will raise farmer-user cost, but will be reflected in larger commodity yields and thus increase income from his farm produce.

Season Under Way

The fertilizer selling season gets under way in Florida and the Gulf Coast area in November. It moves northward in season and continues in each area for a period of about three months.

Changeover from water to rail transportation due to war conditions, plus the increase in rail freight rates is felt keenly by the fertilizer industry on sulfur hauls from Texas and phosphate rock from Florida, as well as on shipments of mixed fertilizers from large port plants.

Synthetic nitrogen solutions—the industry's least expensive source of nitrogen—have been taken from fertilizers and diverted to the direct war effort. Consequently, it has become necessary to obtain nitrogen from other sources, so far as possible. The expected oilseed meal output is greater than the normal requirement for livestock feedings. Ordinarily, seed meals are too expensive for extensive fertilizer use. However, the present nitrogen shortage justified the action being taken to enable farmers to obtain some plant food from this available source.

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formerly Wholesale Administrator of the price ceiling. Mr. Chisholm's responsibility may be summed up something like this:

Heretofore civilian industry and service has been encouraged by way of standardization, simplified practice, etc., to produce as much goods and services as possible, with the available raw materials and manpower.

From now on, the emphasis is reversed. Industry is being told that it must progressively eliminate from production everything that is not essential for health and morale, so as to release every possible man and woman for essential war work or the armed services.

This program will be carried out in three broad steps;

1. The immediate elimination of certain non-essential lines.
2. Drastic standardization of continuing lines.
3. Curtailment of all non-essentials down to the barest minimum requirements of health and morale.

In the chemical field, the most important announcement in recent weeks has been the order diverting the entire output of Canadian distilleries to war purposes on and after November 1. This parallels a corresponding order in the United States effective October 8. The Canadian order provides that "sale and delivery of future production of alcohol 65 per cent overproof or higher may be made only under permit of the Chemical Controller."

Latest statistical report on the Canadian liquor industry shows that in 1941, production of unmatured alcohol increased from 5.8 to 7.6 million gallons while production of whiskies and other potable spirits put into bond dropped from 7.9 to 7.6 million gallons. Spirits bottled or shipped in bulk totalled 6.2 million gallons compared with 7.2 in 1940. Canada's two largest distillers (Hiram Walker-Gooderham Worts and Distillers Corp. Seagram) are especially affected by the new orders since these two rank among the four largest distillers in the United States and probably do about 90 per cent of their business in the United States.

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Heavy Chemicals, Coal-Tar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Petroleum Solvents and Chemicals, Naval Stores, Fats and Oils, etc.

PRICES CURRENT

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f.o.b. works are specified as such. Import chemicals are so designated.

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f.o.b., or ex-dock. Materials sold f.o.b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both.

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1940 Average $1.20 - Jan. 1941 $1.16 - Oct. 1942 $0.92

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Acetaldehyde, 99%, 55, 110 gal drs, wks ....lb.	...	.11	.11	.11	.11	.11
Acetaldol (Aldol), 55, 110 gal drs, c-l, wks ....lb.	...	.12	.12	.12	.11	.13
Acetamide, tech, kgs, wks .lb.	.28	.50	.28	.50	.28	.45
Acetanilid, tech, cryst,						
bbls ....lb.	.29	.31	.29	.31	.29	.31
powd, bbls ....lb.	.27	.29	.27	.29	.27	.29
Acetic Anhydride, drs, c-l, frt all'd ....lb.	.11½	.13	.11½	.13	.10½	.13
Acetin, tech, lcl drs .....lb.	...	.29	.29	.29	.29	.33
Acetone, tks, delv (*PC*) ..lb.	...	.07	.07	.158	.06	.158
drs, c-l, delv (*PC*) ....lb.	...	.08½	.08½	.173	.07½	.173
Acetonitrile, drs, wks ...lb.	1.00	2.00	1.00	2.00	1.00	2.00
Acetophenone, drs ....lb.	1.55	1.60	1.55	1.60	1.55	1.60
Acetophenetidin, bbls, kgs, 1000 lbs ....lb.	...	1.00	1.00	1.00	1.00	1.00
ACIDS						
Acetic, 28%, bbls (*PC*) 100 lbs.	3.38	3.63	3.38	3.63	2.23	3.43
glacial, nat, bbls ..100 lbs.	9.15	9.40	9.15	9.40	7.62	8.55
synth, drs ....100 lbs.	9.15	9.40	9.15	9.40	7.62	8.55
tks, wks ....100 lbs.	6.25	6.93	6.25	6.93	...	...
Acetylsalicylic, USP, (*PC*)						
special, 200 lb bbls ....lb.	...	.45	.45	.45	.45	.45
Standard USP ....lb.	...	.40	.40	.40	.40	.40
Adipic, fib drs, wks .....lb.	...	.31	.31	.31	.31	.31
Anthranilic, ref'd bbls ...lb.	1.20	1.25	1.20	1.25	1.15	1.20
tech, bbls ....lb.	...	.95	.95	.95	.75	.95
Ascorbic, bots, drs (*PC*) oz.	1.50	1.70	1.50	1.85	1.85	2.10
Battery, cbys, wks ..100 lbs.	1.60	2.55	1.60	2.55	1.60	2.55
Benzoic, tech, bbls ......lb.	.43	.47	.43	.47	.43	.47
USP, bbls ....lb.	.54	.59	.54	.59	.54	.59
Boric, tech, gran, frt						
all'd bgs 40 tons ....ton *a*	...	99.00	99.00	99.00	93.50	99.50
bbls ....ton *a*	...	109.00	108.00	109.00	108.00	108.00
Broenner's, bbls ....lb.	...	1.11	1.11	1.11	1.11	1.11
Butyric, c-l drs, wks .....lb.	...	.22	.22	.22	.22	.22
tks, wks ....lb.	...	.21	.21	.21	.21	.21
Caproic, drs, wks ....lb.	...	.35	.25	.35	.25	.30
Chlorosulfonic, drs, wks ..lb.	.03	.04½	.03	.04½	.03½	.05
tks, wks ....lb.	...	.02½	.02½	.02½	...	...
Chromic, drs (*FP*) ......lb.	.16¼	.18¼	.16¼	.18¼	.15¼	.17¼
Citric, crys, gran, bbls ..lb. *b*	.20	.21	.20	.21	.20	.21
Anhyd gran, drs (*PC*) lb.	.22½	.26½	.22½	.26½	.23	.26½
Cleve's bbls ....lb.	...	.65	.65	.65	.65	.65
Cresylic 50%, 210-215° HB, drs, wks, frt equal (A) gal.	.81	.83	.81	.86	.76	.84
Low Boiling ....gal.	.81	.83	.81	.86	.76	.84
Formic, tech, cbys ....lb.	.10½	.11½	.10½	.11½	.10½	.11½
Fumaric, bbls ....lb.	.27	.31	.27	.31	.24	.29
Gallic, tech, bbls ....lb.	1.10	1.12	1.10	1.13	.90	1.13
NF bbls ....lb.	1.27	1.30	1.27	1.30	1.10	1.30
H, bbls wks ....lb.	...	.45	.45	.45	.45	.45
Hydrochloric, see muriatic						
Hydrocyanic cyls, wks ...lb.	.80	1.00	.80	1.00	.80	1.00
Hydrofluoric, 30%, bbls, wks ....lb.	.06	.06½	.06	.06½	.06	.06½
Hydrofluosilic, 35%, bbls lb.	.09	.09½	.09	.09½	.09	.09½
Lactic, 22% dark, bbls ...lb.	.029	.0315	.029	.035	.02¾	[illegible]
22%, light, bbls wks ...lb.	.039	.0415	.039	.0415	.03½	.0415
44%, dark, bbls wks ...lb.	.063	.0655	.063	.0655	.05½	.0655
44%, light, bbls wks ...lb.	.073	.0755	.073	.0755	.06½	.073
Lauric, dist, tech, drs ....lb.	.20	nom.	.20	.20½	.15	.18¾
Laurent's bbls ....lb.	...	.45	.45	.45	.45	.45
Maleic, powd, drs ....lb.	...	.30	.30	.30	.30	.30
Anhydride, drs ....lb.	.25	.26	.25	.26	.25	.26
Malic, powd, kgs ....lb.	...	.47	.47	.47	.47	.47
Mixed, tks N unit ....lb.	.05	.06	.05	.06	.05	.06
S unit ....lb.	.0085	.009	.0085	.009	.0085	.009
Molybdic, kgs, wks ....lb.	.95	1.10	.95	1.10	.95	1.10
Monochloracetic, tech, bbls ....lb.	...	.17	.17	.17	.15	.18
Monosulfonic, bbls ....lb.	...	1.50	1.50	1.50	1.50	1.50
Muriatic, 18° cbys,						
c-l wks ....100 lb.	...	1.50	1.50	1.50	1.50	1.50
tks, wks ....100 lb.	...	1.05	1.05	1.05	1.05	1.05
20° cbys, c-l, wks ..100 lb.	...	1.75	1.75	1.75	1.75	1.75
tks, wks ....100 lb.	...	1.15	1.15	1.15	1.15	1.15
22° cbys, c-l, wks ..100 lb.	...	2.25	2.25	2.25	2.25	2.25
tks, wks ....100 lb.	...	1.65	1.65	1.65	1.65	1.65
CP cbys ....lb.	.06½	.08	.06½	.08	.06½	.08

a Powdered boric acid $5 a ton higher; USP $25 higher; *b* Powdered citric is ½c higher; kegs are in each case ½c higher than bbls; Prices are f.o.b. N. Y., Chicago, St. Louis, deliveries ½c higher than NYC prices; *y* Price given is per gal.

(*A*) Allocations. (*FP*) Under full priority control. (*PC*) Under price ceiling.

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Acid (continued):						
Myristic, dist, drs ....lb.	.19	.19½	.18	.19½	.18	.18½
Naphthenic drs, 220-230 ..lb.	...	.13	.10	.13	.10	.10
tks, wks (A) ....lb.	...	.10	.09	.10	.09	.09
Naphthionic, tech, bbls ...lb.	.60	.65	.60	.65	.60	.65
Nicotinic fib-drms ....lb.	5.00	5.50	5.00	7.15	7.15	7.15
Nitric, 36°, cbys, c-l, wks ....100 lbs. *c*	...	5.00	5.00	5.00	5.00	5.00
38°, c-l, cbys, wks 100 lbs. *c*	...	5.50	5.50	5.50	5.50	5.50
40°, c-l, cbys, wks 100 lbs. *c*	...	6.00	6.00	6.00	6.00	6.00
42°, c-l, cbys, wks 100 lbs. *c*	...	6.50	6.50	6.50	6.50	6.50
CP, cbys ....lb.	.11½	.13	.11½	.13	.11½	.13
Oxalic, bbls, wks (*PC*) ..lb.	.11¼	.12½	.11¼	.14½	.11½	.14¼
Phosphoric, 85% USP, cbys ....lb.	...	.12	.12	.12	.12	.12
50% food grade, c-l, bbls, wks, frt equal ..100 lbs.	4.00	4.25	4.00	4.25	4.00	4.25
Picramic, kgs ....lb.	.65	.70	.65	.70	.65	.70
Picric, bbls, wks ....lb.	...	.35	.35	.35	.35	.35
Propionic, pure, drs, wks lb.	...	.14	.14	.14	.14	.14
tks, wks ....lb.	...	.11	.11	.11	.11	.11
Pyrogallic, tech, lump, pwd, bbls ....lb.	...	1.45	1.45	1.45	1.45	1.45
USP, cryst, cns .....lb.	...	2.10	2.10	2.10	1.70	2.25
Pyroligneous, bbls, delv gal.	...	.25	.25	.25	.25	.25
Ricinoleic, tech, drs, wks lb.	.32	.37	.32	.37	.32	.37
Salicylic, tech, 125 lb bbls, wks (*PC*) ....lb.	...	.33	...	.33	...	.33
USP, bbls ....lb.	.35	.46	.35	.46	.35	.40
Sebasic, tech, bbls, wks ..lb.	.65	.69	.65	.82	.82	.82
Stearic, see under Oils & Fats						
Succinic, bbls ....lb.	...	.75	...	.75	...	.75
Sulfanilic, 250 lb drs, wks lb.	...	.17	...	.17	...	.17
Sulfuric, 60°, tks, wks ..ton	...	13.00	...	13.00	...	13.00
c-l, cbys, wks ....100 lb.	...	1.25	...	1.25	...	1.25
66°, tks, wks ....ton	...	16.50	...	16.50	...	16.50
c-l, cbys, wks ....100 lb.	...	1.50	...	1.50	...	1.50
CP, cbys, wks ....lb.	.06½	.08	.06½	.08	.06½	.08
Fuming (Oleum) 20% tks, wks ....ton	...	19.50	...	19.50	18.50	19.50
Tannic, tech, 300 lb bbls (*A*) ....lb.	.71	.73	.71	.73	.54	.73
Tartaric, USP, gran, powd, 300 lb bbls ....lb.	...	.70½	...	.70½	.46¼	.70½
Tobias, 250 lb bbls ......lb.	.55	.60	.55	.60	.55	.60
Trichloroacetic bottles ...lb.	2.00	2.50	2.00	2.50	2.00	2.50
Tungstic, pure 100 lb. pkg. (A) ....lb.	...	2.86	...	2.86	no prices	
Acrylonitrile, tks (A) ...lb.	...	.34	.34	.34	...	...
Albumen, light flake, 225 lb bbls ....lb.	.65	.70	.65	.75	.55	.75
dark, bbls ....lb.	...	.13½	.12½	.14	.13	.18
egg, edible ....lb.	1.73	1.78	1.73	1.85	.65	1.85
Alcohol, Amyl (from Pentane)						
tks, delv ....lb.	...	.131	...	.131	.111	.131
c-l, drs, delv ....lb.	...	.141	...	.141	.121	.141
lcl, drs, delv ....lb.	...	.151	...	.151	.131	.151
Amyl, normal lcl drs						
Wyandotte, Mich. .....lb.	...	.27	.25	.27	.25	.27
secondary, tks, delv ....lb.						
drs, c-l, delv E of Rockies ....lb.	...	.09½	...	.09½	...	.09½
tertiary, rfd, lcl, drs, f.o.b., Wyandotte, frt all'd ....lb.	...	.09	...	.09	...	.09
Benzyl, cans ....lb.	.65	.75	.65	.75	.65	.75
Butyl, normal, tks, f.o.b. wks, frt all'd (*PC*) (A) ....lb.	.12½	.14¼	.12½	.168	.09	.158
c-l, drs, f.o.b. wks, frt all'd ....lb.	...	.15¼	.13½	.173	.10	.168
Butyl, secondary, tks, delv (*A*) ....lb.	...	.08½	...	.08½	.07¼	.08½
c-l, drs, delv ....lb.	...	.09½	...	.09½	.08¼	.09½
Butyl, tert denat c-l drs lb.	...	.12½	...	.12½	...	.12½
lcl drs ....lb.	...	.13	...	.13	...	.13
tks ....lb.	...	.11½	...	.11½	...	.11½
Capryl, drs, crude, wks lb.	...	.16	...	.16	...	.16
Cinnamic, bottles ....lb.	3.00	3.60	3.00	3.60	2.33	3.60
Denatured, CD, 14, c-l drs, wks (*PC*, *FP*) gal.	...	.65	...	.65	.36½	.45½
tks, East, wks ......gal.	...	.58	...	.58	.26½	.58
Denatured, SD, No. 1, tks,	...	.53	...	.53	.28½	.53

c Yellow grades 25c per 100 lbs. less in each case. *d* Prices given are Eastern schedule; Territories other east of Rockies and 15½c per gal. less than Eastern Works price.

ABBREVIATIONS—Anhydrous, anhyd; bags, bgs; barrels, bbls; carboys, cbys; carlots, c-l; less-than-carlots, lcl; drums, drs; kegs, kgs; powdered, powd; refined, ref'd; tanks, tks; works, f.o.b., wks.

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Alcohols (continued):						
Diacetone, pure, c-l drs, delv ...lb. f	.11½	.14½	.11½	.14½	.09½	.13
tks, delv ...lb.	.10½	.13½	.10½	.13½	.10½	.13½
tech, contract, drs, c-l, delv ...lb.	.11	.13½	.11	.13½	.09	.12
tks, delv ...lb.	.10	.12½	.10	.14	.10	.12½
Ethyl, 190 proof molasses, tks ...gal. g	...	8.12	...	8.12	5.96½	8.12
c-l, drs ...gal. g	...	8.19	...	8.19	6.02½	8.19
c-l, bbls ...gal. g	...	8.25½	...	8.25½	6.03½	8.25
Furfuryl, tech, 500 lb. drs lb.	.20	.35	.20	.35	.20	.25
Hexyl, secondary tks, delv lb.	...	.23	...	.23	.12	.23
c-l, drs, delv lb.	...	.24	...	.24	...	.13
Isoamyl, prim, cans, wks lb.	...	.32	...	.32	...	.32
drs, lcl, delv lb.	...	.22½	...	.22½	.22½	.27
Isobutyl, ref'd, lcl, drs lb.	...	.086	...	.086	.079	.086
c-l, drs ...lb.	...	.076	...	.076	.069	.076
tks ...lb.	...	.076	...	.076	.069	.076
Ethylhexyl, tks, wks ...lb.	.23	.25	.23	.25	.23	.23
Isopropyl, ref'd, 91% drs, frt all'd ...gal.	.40½	.43½	.40½	.43½	.40½	.43½
tks, frt all'd ...gal.	...	.34	.34	.34	.34	.34
99%, drs, frt all'd ...gal.	.44	.47	.44	.47	.44	.47
tks, frt all'd ...gal.	...	.37½	.37½	.37½	.37½	.37½
Octyl, see Ethylhexyl						
Polyvinyl A fib drs ...lb.	...	.65	.54	.65	.26	.54
B fib drs ...lb.	.60	.65	.60	.70	...	...
Propyl, nor, drs, wks gal.	.67	.70	.69	.75	...	...
Spec Solvents, East, drs, wks ...gal.	...	.61	.61	.70	...	...
tks, East, wks ...gal.	...	.54	.54	.66	...	...
Tetrahydrofurfuryl drs, f.o.b. wks ...lb.	.44	.50	.44	.50	...	...
Aldehyde ammonia, 100 gal drs ...lb.	.65	.70	.65	.70	.65	.70
Aldehyde Bisulfite, bbls, delv ...lb.	...	.17	...	.17	...	.17
Aldol, 95%, 55 and 110 gal, drs, delv ...lb.	.12	.15	.12	.15	.11	.15
Alphanaphthol, crude, 300 lb bbls ...lb.	...	.52	...	.52	...	.52
Alphanaphthylamine, 350 lb bbls ...lb.	...	.32	...	.32	...	.32
Alum, ammonia, lump, c-l, bbls, wks ...100 lb.	...	4.25	...	4.25	3.75	4.25
delv NY, Phila ...100 lb.	...	4.25	...	4.25	3.75	4.25
Granular, c-l, bbls wks ...100 lb.	...	4.00	...	4.00	3.50	4.00
Powd, c-l, bbls, wks 100 lb.	...	4.40	...	4.40	3.90	4.40
Potash, lump, c-l, bbls, wks ...100 lb.	...	4.50	...	4.50	4.00	4.50
Granular, c-l, bbls, wks ...100 lb.	...	4.25	...	4.25	3.75	4.25
Powd, c-l, bbls, wks 100 lb.	...	4.65	...	4.65	4.15	4.65
Soda, bbls, wks ...100 lb.	...	3.25	...	3.25	...	3.25
Chrome, bbls ...100 lb.	.12½	.15	.12½	.15	no prices	
Aluminum metal, c-l, (FP) ...100 lb.	15.00	16.00	15.00	16.00	17.00	18.00
Acetate, 20%, nor sol, bbls ...lb.	.09½	.10½	.09½	.11	.10½	.11
Basic powd, bbls, delv lb.	.40	.50	.40	.50	.35	.50
24% sol, bbls, delv lb.	.10½	.11	.10½	.11	.09½	.12
Chloride anhyd 99% wks lb.	.08	.12	.08	.12	.08	.12
Crystals, c-l, drs, wks lb.	.06	.06½	.06	.06½	.06	.06½
Solution, drs, wks ...lb.	.02¾	.03¼	.02¾	.03¼	.02¾	.03¼
Formate, 30% sol bbls, c-l, delv ...lb.	.13	.15	.13	.15	.13	.15
Hydrate, 96%, light, 90 lb. bbls, delv (A) ...lb.	...	.14½	...	.14½	.12½	.14½
heavy, bbls, wks ...lb.	...	.034	...	.034	.029	.03½
Oleate, drs ...lb.	...	.24½	.17½	.26	.17½	.20
Palmitate, bbls ...lb.	.25	.26	.25	.26	.20½	.26
Resinate, pp., bbls ...lb.	...	.15½	.15	.15½	...	.15
Stearate, 100 lb bbls ..lb.	.23	.24	.22	.24	.18	.23
Sulfate, com, c-l, bgs, wks ...100 lb.	1.15	1.25	1.15	1.25	1.15	1.25
c-l, bbls, wks ...100 lb.	1.35	1.45	1.35	1.45	1.35	1.45
Sulfate, iron-free, c-l, bgs, wks ...100 lb.	1.75	1.85	1.75	1.85	1.60	1.85
c-l, bbls, wks ...100 lb.	1.95	2.05	1.95	2.05	1.80	2.10
Ammonia anhyd fert com, tks lb.	.04½	.05	.04½	.05	.04½	.05
Ammonia anhyd, 100 lb cyl lb.	...	.16	...	.16	...	.16
26°, 800 lb drs, delv ...lb.	.02¼	.02½	.02¼	.02½	.02¼	.02½
Aqua 26°, tks, NH_3 cont.	...	.04	.04	.08z	.04	.05¼
Ammonium Acetate, kgs ...lb.	.27	.33	.27	.33	.27	.33
Bicarbonate, bbls, f.o.b. wks ...100 lb.	.0564	.0614	.0564	.0614	.0564	.0614
Bifluoride, 300 lb bbls ..lb.	.16	.18	.15½	.18	.14	.18
Carbonate, tech, 500 lb bbls ...lb.	.08¼	.09¼	.08¼	.09¼	.08¼	.09¼
Chloride, White, 100 lb. bbls, wks ...100 lb.	...	4.45	4.45	...	4.45	...
Gray, 250 lb bbls, wks ...100 lb.	5.50	5.75	5.50	5.75	5.50	5.75
Lactate, 500 lb bbls ...lb.	.15	.16	.15	.16	.15	.16
Laurate, bbls ...lb.	...	.23	...	.23	...	.23
Linoleate, 80% anhyd, bbls ...lb.	...	.12	...	.12	...	.12
Nitrate, tech, bgs, bbls lb.	.0435	.0455	.0435	.0455	.0435	.0455
Oleate, drs ... lb.	...	.14	...	.14	...	.14
Oxalate, neut, cryst, powd, bbls ...lb.	.23	.29	.23	.29	.19	.29
Perchlorate, kgs (A) ...lb.	.55	.65	.55	.65	.55	.65
Persulfate, 112 lb kgs lb.	.25½	.28½	.21	.28½	.21	.22

z On a f.o.b. wks. basis.
(A) Allocation

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Ammonium (continued):						
Phosphate, diabasic tech, powd, 325 lb bbls ...lb.	...	.07¼	.09¼	.09¼	.07¼	.09¼
Ricinoleate, bbls ...lb.	...	.15	...	.15	...	.15
Stearate, anhyd, bbls...lb.	...	.24½	...	.24½	...	.24½
Paste, bbls ...lb.	...	.06½	...	.06½	...	.06½
Sulfate, dom. f.o.b., bulk (A) ...ton	29.00	30.00	29.00	30.00	29.00	30.00
Sulfocyanide, pure, kgs..lb.	.45	.55	.45	.55	.45	.65
Amyl Acetate (from pentane)						
tks, delv ...lb.	...	.145	...	.145	.105	.145
c-l, drs, delv ...lb.	...	.155	...	.155	.115	.155
lcl, drs, delv ...lb.	...	.165	...	.165	.125	.165
tech drs, ex-fusel oil delv lb.	.14½	.17	.14½	.17	...	.14½
Secondary, tks, delv ...lb.	...	.08½	...	.08½	...	.08½
c-l, drs, delv ...lb.	...	.09½	...	.09½	...	.09½
tks, delv ...lb.	...	.08½	...	.08½	...	.08½
Chloride, norm, drs, wks lb.	no prices		.56	.68	.56	.68
mixed l c l drs, wks lb.	...	.08	...	.08	.0565	.08
tks, wks ...lb.	...	.06	...	.06	.0465	.06
Amyl Ether (see Diamyl						
lcl, dms ...lb.	...	.102	...	.102	...	...
cl, dms ...lb.	...	.095	...	.095	...	...
tks ...lb.	...	.085	...	.085	...	
Mercaptan, drs, wks ...lb.	...	1.10	...	1.10	...	1.10
Oleate, lcl, wks, drs...lb.	...	.31	...	.31	.25	.31
Stearate, lcl, wks, drs..lb.	...	.32½	...	.32½	.26	.335
Amylene, c-l, drs, f.o.b. wks, ...lb.	...	.10	.102	.11	.102	.11
lcl, dms, f.o.b., wks	...	.11	...	.11	...	...
tks, f.o.b., wks...lb.	...	.09	...	.09	...	.09
Amylnaphthalenes, see Mixed Amylnaphthalenes						
Aniline Oil, 960 lb drs and tks ...lb.	.12½	.16	.12½	.16	...	.14½
Annatto fine ...lb.	.34	.39	.34	.39	.34	.39
Anthracene, 80-85% ...lb.	...	.55	...	.55	...	.55
Anthraquinone, sublimed, 125 lb bbls ...lb.	...	.70	...	.70	.65	.70
Antimony metal slabs, ton lots ...lb.	...	.14½	.14	.14½	.14	.16½
Butter of, see Chloride						
Chloride, soln, cbys ...lb.	...	.17	...	.17	...	.17
Needle, powd, bbls ...lb.	.18½	.20	.18½	.20	.16	.18
Oxide, 500 lb bbls (A)..lb.	.15	.15½	.15	.16½	.12	.16½
Salt, 63% to 65%, drs lb.	...	.40	.34	.40	.28	.34
Archil, conc, 600 lb bbls lb.	...	.26	...	.26	no prices	
Aroclors, wks ...lb.	.18	.30	.18	.30	.18	.30
Arrowroot, bbls ...lb.	.09½	.09¾	.09½	.10¾	.09½	.10¾
Arsenic, Metal ...lb.	no prices		no prices		no prices	
Red, 224 lb cs kgs ...lb.	no prices		no prices		no prices	
White, 112 lb kgs. (A) lb.	.04	.04¾	.04	.04¾	.03½	.04¾
B						
Barium Carbonate precip, 200 lb bgs, wks ...ton	55.00	65.00	55.00	65.00	45.00	65.00
Nat (witherite) 90% gr, c-l, wks, bgs ...ton	...	43.00	...	43.00	...	43.00
Chlorate, 112 lb kgs, NY (A) ...lb.	...	.60	...	.60	...	.45
Chloride, 600 lb bbls, delv, zone 1 ...ton	77.00	92.00	77.00	92.00	77.00	92.00
Dioxide, 88%, 690 lb drs lb.	...	.10	...	.10	...	.10
Hydrate, 500 lb bbls ...lb.	.06	.07	.06	.07	.05½	.07
Nitrate, bbls ...lb.	.11	.12	.10½	.12½	.08½	.12½
Barytes, floated, 350 lb bbls c-l, wks ...ton	...	27.65	...	27.65	25.15	27.65
Bauxite, bulk mines (A) ton	7.00	10.00	7.00	10.00	7.00	10.00
Bentonite, c-l, 325 mesh, bgs, wks ...ton	...	16.00	...	16.00	...	16.00
200 mesh ...ton	...	11.00	...	11.00	...	11.00
Benzaldehyde, tech, 945 lb. drs, wks ...lb.	.45	.55	.45	.55	.45	.55
Benzene (Benzol), 90%, Ind. 8000 gal tks, ft all'd gal.	(A)	.15	...	.15	.14	.15
90% c-l, drs ... gal.	...	.20	...	.20	.19	.20
Ind pure, tks, frt all'd gal.	...	.15	...	.15	.14	.15
Benzidine Base, dry, 250 lb. bbls ...lb.	...	.70	...	.70	...	.70
Benzoyl Chloride, 500 lb drs lb.	.23	.28	.23	.28	.23	.28
Benzyl Chloride, 95-97% rfd, drs ...lb.	.22	.24	.22	.24	.19	.24
Beta-Naphthol, 250 lb bbls, wks ...lb.	.23	.24	.23	.24	.23	.24
Naphthylamine, sublimed, 200 lb bbls ...lb.	...	1.25	1.25	...	1.25	1.35
Tech, 200 lb bbls ...lb.	...	.51	...	.51	.51	.52
Bismuth metal ...lb.	...	1.25	...	1.25	...	1.25
Chloride, boxes ...lb.	...	3.00	...	3.00	3.00	3.25
Hydroxide, boxes ...lb.	3.35	3.46	3.35	3.46	3.35	3.46
Oxychloride, boxes ...lb.	3.10	3.19	3.10	3.19	3.10	3.19
Subbenzoate, fib dms...lb.	...	3.40	...	3.40	...	3.40
Subcarbonate, kgs ...lb.	1.59	1.85	1.59	1.85	1.59	1.85
Subnitrate, fibre, drs ...lb.	1.29	1.33	1.29	1.57	1.20	1.57
Trioxide, powd, boxes ..lb.	...	3.65	...	3.65	...	3.65
Blanc Fixe, Pulp, 400 lb. bbls, wks ...ton h	40.00	46.50	40.00	46.50	35.00	46.50
Bleaching Powder, 800 lb drs, c-l, wks, contract 100 lb.	2.25	3.10	2.25	3.10	2.00	3.10
lcl, drs, wks ... lb.	2.50	3.35	2.50	3.35	2.25	3.35
Blood, dried, f.o.b., NY unit	...	4.95	5.25	5.75	4.75	5.25
Chicago, high grade ..unit	...	5.38	5.40	5.90	5.00	5.40
Imported shipt ...unit	...	nom.	5.00	5.50	4.75	5.00
Blues, Bronze Chinese						
Prussian Soluble ...lb.	...	.36	...	.36	.33	.36
Milori, bbls ...lb.	...	.36	...	.36	.33	.36

h Lowest price is for pulp, highest for high grade precipitated; i Crystals $6 per ton higher; USP, $15 higher in each case; * Freight is equalized in each case with nearest producing point.

Prices Current

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Blues (continued):						
Ultramarine,* dry, wks, bbls ... lb.	.12	.13	.11	.13	...	.11
Regular grade, group 1 lb.	.17	.27	.16	.27	.16	.20
Pulp, Cobalt grade ... lb.	.23	.27	.22	.27	.22	.24
Bone, 4½ + 50% raw, Chicago ... ton	...	39.50	39.00	40.00	30.00	40.00
Bone Ash, 100 lb kgs ... lb.	.06	.07	.06	.07	.06	.07
Meal, 3% & 50% imp ton	...	37.50	...	37.50	31.50	37.50
Domestic, bgs, Chicago ton	38.00	40.00	38.00	40.00	32.00	40.00
Borax, tech, gran, 80 and 40 ton lots, bgs, delv .. ton *i*	...	46.00	45.00	46.00	43.00	45.00
bbls, delv (*FP*) ... ton *i*	...	55.00	54.00	55.00	53.00	56.00
Tech, powd, 80 and 40 ton lots, bgs ... ton	...	51.00	50.00	51.00	48.00	50.00
bbls, delv ... ton	...	60.00	59.00	60.00	58.00	61.00
Bordeaux Mixture, drs ... lb.	.11	.11½	.11	.11½	.11	.11½
Bromine, cases ... lb.	.25	.30	.25	.30	.25	.30
Bronze, Al, pwd, 300 lb drs (*FP*) ... lb.	...	.59	...	.59	...	.57
Gold, blk ... lb.	.60	.65	.60	.65	.60	.65
Butanes, com 16-32° group 3 tks (*PC*) ... lb.	.02½	.03½	.02½	.03½	.02½	.03
Butyl, acetate, norm drs, frt all'd ... lb.	...	.15¾	.14½	.168	.10	.168
tks, frt all'd ... lb.	...	.14¾	.13½	.158	.09	.158
Secondary, tks, frt all'd lb.	...	.08½	...	.08½	.07¼	.08½
drs, frt all'd ... lb.	...	.09½	...	.09½	.08¾	.09½
Aldehyde, 50 gal drs, wks ... lb.	.14½	.16½	.14½	.17½	.15½	.17½
Carbinol, norm (see Normal Amyl Alcohol)						
Chloride, normal						
lcl, drs ... lb.	...	.35	.28	.35	...	...
c-l, drs ... lb.	...	.32	.25	.32	...	...
Crotonate, norm, 55 and 110 gal drs, delv ... lb.	...	.35	...	.35	...	.35
Lactate ... lb.	...	.26½	...	.26½	...	.23½
Oleate, drs, frt all'd ... lb.	...	.25	...	.25	...	.25
Propionate, drs ... lb.	.16½	.17	.16½	.17	.16½	.17
tks, delv ... lb.	...	.35	.25	.35	...	.25
Stearate, 50 gal drs ... lb.	...	.31	...	.31	.28½	.32½
Tartrate, drs ... lb.	no prices		no prices		.55	.60
Butyraldehyde, drs, lcl, wks lb.	...	.35½	...	.35½	...	.35½
C						
Cadmium Metal (*PC*) ... lb.	.90	.95	.90	.95	.80	.95
Sulfide, orange, boxes .. lb.	...	1.10	...	1.10	...	1.10
Calcium, Acetate, 150 lb bgs c-l, delv ... 100 lb.	3.00	4.00	3.00	4.00	1.90	4.00
Arsenate, c-l, E of Rockies, dealers, drs ... lb.	.07	.08	.06½	.08	.06	.07½
Carbide, drs ... lb.	...	.04¾	...	.04¾	...	.04¾
Carbonate, tech, 100 lb bgs, c-l ... ton	16.00	20.00	16.00	20.00	16.00	20.00
Chloride, flake, 375 lb drs, burlap bgs, c-l, delv ton	...	21.00	...	21.00	...	20.50
paper bgs, c-l, delv ton	18.50	41.00	18.50	41.00	18.50	35.00
Solid, 650 lb drs, c-l, delv ... ton	18.00	34.50	18.00	34.50	18.00	34.50
Ferrocyanide, 350 lb bbls wks ... lb.	...	.20	...	.20	...	.20
Gluconate, Pharm, 125 lb bbls ... lb.	.52	.59	.52	.59	.52	.59
Levulinate, less than 25 bbl lots, wks ... lb.	...	3.00	...	3.00	...	3.00
Nitrate, 100 lb bgs ... ton	no prices		no prices		no prices	
Palmitate, bbls ... lb.	.28	.29	.28	.29	.22	.29
Phosphate, tribasic, tech, 450 lb bbls ... lb.	.0635	.0705	.0635	.0705	.0635	.0705
Resinate, precip, bbls .. lb.	.15	.16	.13	.16	.13	.14
Stearate, 100 lb bbls ... lb.	.26	.27	.26	.27	.20½	.27
Camphor, slabs ... lb.	1.60	1.65	1.60	1.65	.73	1.65
Powder ... lb.	1.60	1.65	1.60	1.65	.63	1.65
Carbon Bisulfide, 500 lb drs lb.	.05	.05¾	.05	.05¾	.05	.05¾
Black, c-l, bgs, f.o.b. plants ... lb.	...	.03625	...	.03625	.03325	.0342
Decolorizing, drs, c-l .. lb.	.08	.15	.08	.15	.08	.15
Dioxide, Liq, 20-25 lb cyl lb.	.06	.08	.06	.08	.06	.08
Tetrachloride, (*FP*) (*PC*) 55 or 110 gal drs, c-l, delv ... gal.	...	.83	.73	.83	.66½	.73
Casein, Standard, Dom, grd lb.	...	.14½	.15	.30½	.11½	.31
80-100 mesh, c-l bgs ... lb.	...	.20	.15½	.31	.12	.31½
Castor Pomace, 5½ NH_3, c-l, bgs, wks (*PC*) ... ton	...	19.00	16.00	19.00	15.00	16.00
Imported, ship, bgs ... ton	no prices		no prices		no prices	
Celluloid, Scraps, ivory cs lb.	.13	.15	.13	.15	.12	.15
Transparent, cs ... lb.	...	.20	...	.20	...	.20
Cellulose, Acetate, frt all'd, 50 lb kgs ... lb.	.30	.35	.30	.35	...	.30
Triacetate, flake, frt all'd ... lb.	...	.30	...	.30	...	.30
Chalk, dropped, 175 lb bbls lb.	...	.02⅞	...	.02⅞	.02¾	.02⅞
Precip, heavy, 560 lb cks ... 100 lbs.	...	32.50	32.50	32.50	32.50	32.50
Charcoal, Hardwood, lump, blk, wks ... bu.	...	.15	...	.15	...	.15
Softwood, bgs, delv* .. ton	27.50	38.50	25.00	38.50	25.00	36.00
Willow, powd, 100 lb bbls, wks ... lb.	.06	.07	.06	.07	.06	.07
Chestnut, clarified tks, wks lb.	...	.0225	...	.0225	.01¾	.0275
25%, bbls, wks ... lb.	...	.0275	...	.0275	.0240	.0275
China Clay, c-l, blk mines ton	...	7.60	...	7.60		7.60
Imported, lump, blk ... ton	19.00	24.00	18.60	24.00	18.60	...

j A delivered price; * Depends upon point of delivery
(*FP*) Full Priority. (*PC*) Price Ceiling.
(A) Allocation.

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Chlorine, cyls, lcl, wks, contract (*FP*) (A) ... lb.	...	.07¼	...	.07¼	...	.07¼
cyls, c-l, contract ... lb. *j*	...	.05¼	...	.05¼	...	.05¼
Liq, tk, wks, contract 100 lb.	...	1.75	...	1.75	...	1.75
Multi, c-l, cyls, wks, cont ... lb.	...	2.00	...	2.00	1.90	2.00
Chloroacetophenone, tins, wks ... lb.	3.00	3.50	3.00	3.50	3.00	3.50
Chlorobenzene, Mono, 100 lb. drs, lcl, wks ... lb.	...	.08	...	.08	.06	.08
Chloroform, tech, 650 lb drs ... lb.	...	.20	...	.20	...	.20
USP, 650 lb drs ... lb.	...	.30	...	.30	...	.30
Chloropicrin, comml cyls .. lb.	...	.80	...	.80	...	.80
Chrome, Green, CP ... lb.	.23	.33	.23	.33	.21	.25
Yellow ... lb.	.16	.17	.16	.17	.13½	.14½
Chromium Acetate, 8% Chrome, bbls ... lb.	...	.07½	.07½	.08½	.07¾	.08½
Fluoride, powd, 400 lb bbls ... lb.	.27	.28	.27	.28	.27	.28
Coal tar, bbls ... bbl.	8.25	9.25	7.50	9.25	7.50	7.75
Cobalt Acetate, bbls (A) lb.	...	.83¾	...	.83¾	.80½	.83¾
Carbonate tech, bbls (A) lb.	...	1.58	...	1.58	...	1.58
Hydrate, bbls (A) ... lb.	...	2.04	...	2.04	1.98	2.04
Linoleate, solid, bbls ... lb.	...	.44	.42	.44	.33	.42
paste, 5%, drs ... lb.	.32	.35	.31	.35	...	.31
Oxide, black, bgs (A) .. lb.	...	1.84	...	1.84	...	1.84
Resinate, fused, bbls ... lb.	...	.15	.13½	.15	...	.13½
Precipitated, bbls ... lb.	...	.38	.34	.38	...	.34
Cochineal, gray or bk bgs lb.	.37	.38	.37	.38	.37	.38
Teneriffe silver, bgs ... lb.	.38	.39	.38	.39	.38	.39
Copper, metal *FP*, *PC* 100 lb.	12.00	12.50	12.00	12.50	12.00	12.50
Acetate, normal, bbls, delv (A) ... lb.	.24	.26	.24	.26	.22	.26
Carbonate, 52-54% 400 lb bbls (A) ... lb.	.18	.20½	.18	.20½	.1650	.20½
Chloride, 250 lb bbls (A) ... lb.	...	.23¼	.19½	.23¼	.16	.19½
Cyanide, 100 lb drs (A) lb.	.34	.38	.34	.38	.34	.38
Oleate, precip, bbls ... lb.	.22	.29½	.20	.29½	...	.20
Oxide, bl, bbls, wks (A) lb.	.19½	.21	.19½	.21	.18	.21
red 100 lb bbls ... lb.	.20	.22	.20	.22	.19	.22
Sub-acetate verdigris, 400 lb bbls ... lb.	.18	.19	.18	.19	.18	.19
Sulfate, bbls, c-l, wks, (A) ... 100 lb.	5.15	5.50	5.15	5.50	4.75	5.50
Copperas crys and sugar bulk c-l, wks ... ton	...	17.00	...	17.00	14.00	17.00
Corn sugar, tanners, bbls 100 lb.	...	3.54	3.54	4.05	3.36	4.05
Corn Syrup, 42°, bbls 100 lb.	...	3.69	3.52	3.69	3.42	3.52
43°, bbls ... 100 lb.	...	3.74	3.57	3.74	3.47	3.57
Cotton, Soluble, wet 100 lb bbls ... lb.	.40	.42	.40	.42	.40	.42
Cream Tartar, powd & gran 300 lb bbls ... lb.	...	.57½	...	.57½	.38¼	.57½
Creosote, USP 42 lb cbys lb.	.60	.77	.60	.77	.45	.77
Oil, Grade 1 tks ... gal.	...	.15½	...	.15½	.13½	.15½
Grade 2 ... gal.	.122	.132	.122	.132	.122	.132
Cresol, USP, drs. c-l (A) lb.	.10¼	.11¼	.10¼	.11½	.09¼	.11¼
Crotonaldehyde, 97%, 55 and 110 gal drs, wks ... lb.	...	.15	...	.15	.11	.15
Cutch, Philippine, 100 lb bale lb	no supplies		...	.05¼	.04¼	.05¼
Cyanamid, pulv, bgs, c-l, frt (A) all'd, nitrogen basis, unit	1.52½ nom.		no prices		...	1.40
D						
Derris root 5% rotenone, bbls ... lb.	...	.35	.40	.45	.21	.40
Dextrin, corn, 140 lb bgs f.o.b., Chicago ... 100 lb.	...	4.00	...	4.00	3.80	4.00
British Gum, bgs ... 100 lb.	...	4.25	...	4.25	4.05	4.25
Potato, Yellow, 220 lb bgs lb.	...	.10	.09½	.10	.08	.08½
White, 220 lb bgs, lcl lb.	.09½	.11¼	.09½	.11¼	.08½	.09
Tapioca, 200 bgs, lcl .. lb.	...	.0715	...	.0715	...	.0715
White, 140 lb bgs .. 100 lb.	...	3.95	...	3.95	3.75	3.95
Diamylamine, c-l, drs, wks lb.	...	.61	.50	.61	.47	.50
lcl drs, wks ... lb.	...	.64	.53	.64	.48	.53
Diamylene, drs, wks ... lb.	...	.105	...	.105	.095	.105
lcl, drs ... lb.	...	.112	...	.112	...	...
tks, wks ... lb.	...	.09½	...	.09½	.08½	.09½
Diamylether ... lb.	...	...	...	...	.085	.102
lcl, drs ... lb.	...	.112	.102	.112	...	...
c-l, drs ... lb.	...	.105	.095	.105	...	...
tks ... lb.	...	.095	.085	.095	...	...
Diamylnaphthalene, lcl, drs, f.o.b. wks ... lb.	...	.17	...	.17	.17	.20
Diamylphenol, lcl, drs ... lb.	...	.21	...	.21	...	...
Diamylphthalate, drs, wks lb.	...	.22	.21	.22	.21	.21½
Diamyl Sulfide, drs, lcl .. lb.	...	.25	...	.25	...	...
Diatomaceous Earth, see Kieselguhr.						
Dibutoxy Ethyl Phthalate, drs, wks ... lb.	...	.35	...	.35	...	.35
Dibutylamine, lcl, drs, wks lb.	...	.64	.53	.64	...	.53
c-l, drs, wks ... lb.	...	.61	.50	.61	...	.50
tks, wks ... lb.	...	.59	.48	.59	...	.48
Dibutyl Ether, drs, wks, lcl lb.	.26	.28	.26	.28	.25	.28
Dibutylphthalate, drs, wks, frt all'd ... lb.	.21	.23½	.21	.23½	.19	.20
Dibutyltartrate, 50 gal drs lb.	...	.92	.87	.92	.50	.87
Dichlorethylene, drs ... lb.	...	.25	...	.25	...	.25
Dichloroethylether, 50 gal drs. wks (A) ... lb.	.15	.16	.15	.16	.15	.16
tks, wks ... lb.	...	.14	...	.14	...	.14
Dichloromethane, drs, wks lb.	...	.23	...	.23	...	.23
Dichloropentanes, c-l, drs lb.	...	.037	...	.037	.025	.04
lcl, drs ... lb.	...	.045	...	.045	...	.
tks, wks ... lb.	...	.03	...	.03	.0221	.025

* These prices were on a delivered basis.

	Current	Market	1942 Low	1942 High	1941 Low	1941 High
Diethanolamine, tks ,wks lb.	...	.22½	...	.22½	...	.22½
Diethylamine, 300 lb drs, lcl, f.o.b., wks ....lb.	...	.81	.70	.81	...	.70
Diethylamino Ethanol, lcl, drs, f.o.b. Wyandotte, frt all'd E. Miss ....lb.	...	.85	.75	.85	...	.75
Diethylaniline, 850 lb drs lb.	...	.40	...	.40	...	.40
Diethylcarbonate, com drs lb.	...	.25	...	.25	...	.25
Diethylorthotoluidin, drs .lb.	.64	.67	.64	.67	.64	.67
Diethylphthalate, c-l, drs ..lb.	...	.22	.21½	.22	.19	.20
Diethylsulfate, tech, drs, wks, lcl ....lb.	.13	.14	.13	.14	.13	.14
Diethyleneglycol, drs ....lb.	.14	.15½	.14	.15½	.14	.15½
Mono ethyl ether, drs ..lb.	.14½	.15½	.14½	.15½	.14½	.15½
tks, wks ....lb.	...	.13½	...	.13½	...	.13½
Mono butyl ether, drs ..lb.	.22½	.24½	.22½	.24½	.22½	.24½
tks, wks ....lb.	...	.22	...	.22		.22
Diethylene oxide, 50 gal drs, wks ....lb.	.20	.24	.20	.24	.20	.24
Diglycol Laurate, bbls ...lb.	.31	.33	.16	.33	...	.16
Oleate, bbls ....lb.	...	.17	...	.17	...	.17
Stearate, bbls ....lb.	...	.22	...	.22	...	.22
Dimethylamine, 400 lb drs, pure 25 & 40% sol 100% basis ....lb.	.85	.90	.85	.90	.85	1.05
Dimethylaniline, 240 lb drs lb.	.23	.24	.23	.24	.23	.24
Dimethyl phthalate, drs, wks, frt all'd ......lb.	...	.20	...	.20	.18½	.20
Dimethylsulfate, 100 lb drs lb.	.45	.50	.45	.50	.45	.50
Dinitrobenzene, 400 lb bbls lb.	...	.18	...	.18	.	.18
Dinitrochlorobenzene, 400 lb bbls ....lb.	...	.14	...	.14	...	.14
Dinitronaphthalene, 350 lb bbls ....lb.	.35	.38	.35	.38	.35	.38
Dinitrophenol, 350 lb bbls lb.	...	.22	...	.22	...	.22
Dinitrotoluene, 300 lb bbls lb.	...	.18	...	.18	.15½	.18
Diphenyl, bbls ....lb.	...	.15	...	.15	.15	.20
Diphenylamine (A) ......lb.	...	.25	...	.25	.	.25
Diphenylguanidine, 100 lb drs (A) ....lb.	.35	.37	.35	.37	.35	.37
Dip Oil, see Tar Acid Oil.						
Divi Divi pods, bgs shipmt ton	...	80.00	55.00	80.00	32.00	52.00
Extract ....lb.	.05¼	.06¼	.05¼	.06¼	.05¼	.06¼
Drymet (see sodium metasilicate anhydrous).						
E						
Egg Yolk, dom., 200 lb. cases lb.	1.00	1.10	.87	1.10	.60	1.05
Epsom Salt, tech, 300 lb bbls c-l, NY .....100 lb.	...	1.90	...	1.90	...	1.90
USP, c-l, bbls .....100 lb.	...	2.00	2.00	2.10	...	2.10
Ether, USP anaesthesia 55 lb drs ....lb.	.60	.61	.52	.61	.26	.53
Isopropyl 50 gal drs ...lb.	.07	.08	.07	.08	.07	.08
tks, frt all'd ....lb.	...	.06	...	.06	...	.06
Nitrous conc bottles ...lb.	.93	1.10	.73	1.10	...	.73
Synthetic, wks, tks .....lb.	...	.12½	.08	.12½	.08	.09
Ethyl Acetate, 85% Ester tks, frt all'd ....lb.	.11	.12	.11	.12	.06½	.12
drs, frt all'd ....lb.	.12	.13	.12	.13	.07½	.13
99%, tks, frt all'd ...lb.	.11¼	.12¼	.11¼	.12¼	.06¼	.12¼
drs, frt all'd ....lb.	.12¼	.13¼	.12¼	.13¼	.07¼	.13¼
Acetoacetate, 110 gal drs lb.	...	.37½	...	.37½	.27½	.37½
Benzylaniline, 300 lb drs lb.	.86	.88	.86	.88	.86	.88
Bromide, tech drs .....lb.	.50	.55	.50	.55	.50	.55
Cellulose, drs, wks, frt all'd ....lb.	.50	.60	.50	.60	.45	.50
Chloride, 200 lb drs ....lb.	.18	.20	.18	.20	.18	.20
Chlorocarbonate, cbys ..lb.	...	.30	...	.30	...	.30
Crotonate, drs ....lb.	...	.35	...	.35	...	.35
Formate, drs, frt all'd ..lb.	...	.27¼	...	.27¼	.25	.27¼
Lactate, drs, wks ......lb.	...	.33½	...	.33½	...	.33½
Oxalate, drs, wks ......lb.	...	.33	...	.33	.25	.33
Silicate, drs, wks ......lb.	...	.77	...	.77	...	.77
Ethylene Dibromide, 60 lb drs ....lb.	.65	.70	.65	.70	.65	.70
Chlorhydrin, 40%, 10 gal cbys chloro, cont ....lb.	.75	.85	.75	.85	.75	.85
Anhydrous ....lb.	...	.75	...	.75	...	.75
Dichloride, (*FP*) 50 gal drs, E. Rockies ....lb.	...	.0742	...	.0742	.0693	.0746
Glycol, 50 gal drs, wks. lb.	...	.15½	.14½	.18½	.14½	.18½
tks, wks (A) ....lb.	...	.14½	.13½	.14½	...	.13½
Mono Butyl Ether, drs, wks ....lb.	.16½	.17½	.16½	.17½	.16½	.17½
tks, wks ....lb.	...	.15½	...	.15½	...	.15½
Mono Ethyl Ether, drs wks ....lb.	.14½	.15½	.14½	.15½	.14½	.15½
tks, wks ....lb.	...	.13½	...	.13½	...	.13½
Mono Ethyl Ether Acetate, drs, wks .....lb.	.11½	.12½	.11½	.12½	.11½	.12½
tks, wks ....lb.	...	.10½	...	.10½	...	.10½
Mono Methyl Ether, drs wks ....lb.	.15½	.16½	.15½	.16½	.15½	.16½
tks, wks ....lb.	...	.14½	...	.14½	...	.14½
Oxide, cyl ....lb.	.50	.55	.50	.55	.50	.55
Ethylideneaniline ....lb.	.45	.47½	.45	.47½	.45	.47½
F						
Feldspar, blk pottery ....ton	17.00	19.00	17.00	19.00	17.00	19.00
Powd, blk wks ....ton	14.00	17.50	14.00	17.50	14.00	17.50
Ferric Chloride, tech, crys, 475 lb bbls ....lb.	.05	.07½	.05	.07½	.05	.07½
sol, 42° cbys ....lb.	.06½	.07	.06½	.07	.06½	.07

l + 10; *m* + 50; * Bbls. are 20c higher.
FP Full Priority. *PC* Price Ceiling. (A) Allocation

Current

Fish Scrap
Karaya

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Fish Scrap, dried, unground wks (*PC*) ...... unit *l*	...	5.00	4.75	4.85	4.35	4.85
Acid, Bulk, 6 & 3%, delv Norfolk & Baltimore basis .... unit *m*	...	4.50	2.75	4.50	2.75	3.25
Fluorspar, 98% bgs (*PC*) ton	28.00	32.00	28.00	34.00	29.00	34.00
Formaldehyde, c-l, bbls, wks (*FP, PC*) ....lb.	.055	.0575	.055	.0575	...	...
Fossil Flour ....lb.	.02½	.04	.02½	.04	.02½	.04¼
Fullers Earth, blk, mines ton	8.50	15.00	8.50	15.00	8.50	15.00
Imp powd, c-l, bgs ....ton	30.00	40.00	30.00	40.00	no prices	
Furfural (tech) drs, wks lb.	.15	.20	.15	.20	.10	.15
tks, wks ....lb.	...	.09	...	.09	...	.09
Furfuramide (tech) 100 lb drs ....lb.	...	.30	...	.30	...	.30
Fusel Oil, 10% impurities lb.	.18½	.19½	.18	.19½	.16	.19½
Fustic, crystals, 100 lb boxes ....lb.	.28	.32	.28	.32	.24	.32
Liquid 50°, 600 lb bbls lb.	.12½	.16	.12½	.16	.10½	.16
Solid, 50 lb boxes .....lb.	.19	.21	.19	.21	.19	.21
G						
G Salt paste, 360 lb bbls ..lb.	...	.45	...	.45	...	.45
Gambier, com 200 lb bgs lb.	no prices		...	.09½	.06½	.09½
Singapore cubes, 150 lb bgs ....100 lb.	.30	nom.	.12½	.30	.08¼	.11
Glauber's Salt, tech, c-l, bgs, wks ....100 lb.	1.05	1.28	1.05	1.28	.95	1.28
Anhydrous, see Sodium Sulfate						
Glue, bone, com grades, c-l bgs ....lb.	.15½	.18½	.15½	.18½	.13½	.18½
Better grades, c-l, bgs lb.	.19	.30	.19	.30	.15	.30
Glycerin (*PC*) CP, drs ...lb.	...	.18¼	...	.18¼	.14½	.19½
Dynamite, 100 lb drs ...lb.	...	.18¼	...	.18¼	...	.18¼
Saponification, drs .....lb.	...	.12¼	...	.12¼	.09½	.20½
Soap Lye, drs ....lb.	...	.11½	...	.11½	.07⅛	.18
Glyceryl Bori-Borate, bbls lb.	...	.40	...	.40	...	.40
Monoricinoleate, bbls ...lb.	...	.27	...	.27	...	.27
Monostearate, bbls .....lb.	...	.30	...	.30	...	.30
Oleate, bbls ....lb.	...	.22	...	.22	...	.22
Phthalate ....lb.	...	.38	...	.38	...	.38
Glyceryl Stearate, bbls ...lb.	...	.18	...	.18	...	.18
Glycol Bori-Borate, bbls ..lb.	...	.22	...	.22	...	.22
Phthalate, drs ....lb.	...	.38	...	.38	...	.38
Stearate, drs ....lb.	...	.26	...	.26	...	.26
GUMS						
Gum Aloes, Barbadoes ...lb.	.80	.85	.80	.85	.80	.95
Arabic, amber sorts ....lb.	.14½	.15	.14½	.24	.14	.25
White sorts, No. 1, bgs lb.	.33	.35	.33	.35	.35	.45
Powd, bbls ....lb.	.20	.21	.20	.28	.18	.30
Asphaltum, Barbadoes (Manjak) 200 lb bgs, f.o.b. NY ....lb.	.05¼	.12	.04½	.12	.04½	.05½
California, f.o.b. NY, drs ton	35.00	40.00	20.00	40.00	20.00	36.50
Egyptian, 200 lb cases, f.o.b. NY ....lb.	.12	.15	.12	.15	.12	.15
Benzoin Sumatra, USP, 120 lb cases ....lb.	.50	.55	.45	.55	.19	.50
Copal, Congo, 112 lb bgs, clean, opaque ....lb.	...	.49½	...	.49½	...	.49½
Dark amber ....lb.	...	.12¼	...	.12¼	...	.12¼
Light amber ....lb.	...	.17	...	.17	...	.17
Copal, East India, 180 lb bgs						
Macassar pale bold ... lb.	...	.17⅜	...	.17⅜	.12¼	.17⅜
Chips ....lb.	...	.11½	...	.11½	.06¾	.11½
Dust ....lb.	...	.07	...	.07	.05¼	.07
Nubs ....lb.	...	.13⅜	...	.13⅜	.10½	.13⅜
Singapore, Bold ....lb.	...	.22⅜	...	.22⅜	.15¾	.22⅜
Chips ....lb.	...	.12⅜	...	.12⅜	.08½	.12⅜
Dust ....lb.	...	.07	...	.07	.05¼	.07
Nubs ....lb.	...	.17¾	...	.17¾	.11	.17¾
Copal Manila, 180-190 lb. (A)	...	.14½	.14	.14½	.13⅞	.14
Loba B ....lb.	...	.13¾	.13¾	.14¼	.11¾	.14¼
Loba C ....lb.	...	.13⅜	.13⅜	.13⅞	.11¼	.13⅞
DBB ....lb.	...	.11	.11	.12¼	.10	.12¼
MA sorts ....lb.	...	.09¾	.09¾	.10¼	.07¾	.10¼
Copal Pontianak, 224 lb cases, bold gen. (A) lb.	...	.22⅜	.22⅜	.22⅞	.15⅜	.22⅞
Chips ....lb.	...	.12⅜	.12⅜	.14½	.10	.14½
Mixed ....lb.	...	.17⅜	.17⅜	.17⅞	.14⅜	.17⅞
Nubs ....lb.	...	.18⅜	.18⅜	.18⅞	.12¾	.18⅞
Split ....lb.	...	.19⅛	.19⅛	.19⅝	.13¾	.19⅝
Damar Batavia, 136 lb cases (A)						
A ....lb.	...	.35¾	...	.35¾	.21⅝	.35¾
B ....lb.	...	.34⅜	...	.34⅜	.20¼	.34⅜
C ....lb.	...	.28⅝	...	.28⅝	.14⅝	.28⅝
D ....lb.	...	.25⅝	...	.25⅝	.13¼	.25⅝
A/D ....lb.	...	.28⅜	...	.28⅜	.15¼	.28⅜
A/E ....lb.	...	.25⅝	...	.25⅝	.12⅞	.25⅝
E ....lb.	...	.18¾	...	.18¾	.10	.18¾
F ....lb.	...	.13¾	...	.13¾	.08	.13¾
Singapore, No. 1 .....lb.	...	.30⅝	...	.30⅝	.16⅝	.30⅝
No. 2 ....lb.	...	.25⅜	...	.25⅜	.12¼	.25⅜
No. 3 ....lb.	...	.12⅜	...	.12⅜	.07⅛	.12⅜
Chips ....lb.	...	.23½	...	.23½	.11	.23½
Dust ....lb.	...	.13	...	.13	.07⅛	.13
Seeds ....lb.	...	.17¾	...	.17¾	.09⅞	.17¾
Elemi, cns, c-l (A) ......lb.	...	.08⅞	...	.08⅞	.08½	.08⅞
Ester ....lb.	...	.09½	.08½	.09½	.06¼	.09½
Gamboge, pipe, cases ....lb.	2.30	2.35	.95	2.35	.95	1.00
Powd, bbls ....lb.	2.50	2.55	1.05	2.55	1.05	1.10
Ghatti, sol, bgs ....lb.	.11	.15	.11	.15	.11	.15
Karaya, bbls, bxs, drs ...lb.	.14	.33	.14	.33	.14	.33

FP Full Priority. *PC* Price Ceiling. (A) Allocation

Prices

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Kauri, N Y (A)						
Brown XXX, cases ....lb.	...	.77	.60	.77	...	.60
BX ....lb.	...	.38	...	.38	...	.38
B1 ....lb.	...	.34	.28	.34	...	.28
B2 ....lb.	...	.30	.24	.30	...	.24
B3 ....lb.	...	.27½	.18½	.27½	...	.18½
Pale XXX ....lb.	...	.66	.61	.66	...	.61
No. 1 ....lb.	...	.43	.41	.43	...	.41
No. 2 ....lb.	...	.31	.24	.31	...	.24
No. 3 ....lb.	...	.22	.17¾	.22	...	.17¾
Kino, tins ....lb.	no prices		no prices		no prices	
Mastic ....lb.	3.50	3.75	3.25	3.75	1.50	3.30
Sandarac, prime quality, 200 lb bgs & 300 lb cks ..lb.	.95	.97½	.95	1.10	.50	1.10
Senegal, picked bgs ....lb.	...	.30	...	.30	...	.30
Sorts ....lb.	...	.13	...	.13	...	.13
Thus, bbls ....280 lbs.	...	16.50	...	16.50	15.00	16.50
Tragacanth, No. 1, cases ..lb.	3.75	4.00	3.50	4.00	2.75	3.40
No. 2 ....lb.	2.00	3.00	2.00	3.00	2.45	2.80
No. 3 ....lb.	1.10	1.20	1.10	1.20	1.10	2.60
Yacca, bgs (*PC*) ....lb.	.06	.07½	.06	.07¼	.03½	.07¼
H						
Hematine crys, 400 lb bbls lb.	.24	.34	.24	.34	.20	.34
Hemlock, 25%, 600 lb bbls						
wks ....lb.	...	.0385	.03½	.0385	.03⅛	.03½
tks ....lb.	...	.0325	.03	.0325	.02¾	.03
Hexalene, 50 gal drs, wks lb.	...	.23	...	.23	.23	.30
Hexane, normal 60-70° C. Group 3, tks (*PC*) ..gal.	...	.11	...	.11	.09¾	.11
Hexamethylenetetramine, powd, drs (*FP*) ....lb.	.32	.33	.32	.33	.32	.33
Hexyl Acetate, secondary, delv, drs ....lb.	.13	.13½	.13	.13½	.13	.13½
tks ....lb.	...	.12	...	.12	...	.12
Hoof Meal, f.o.b. Chicago unit	4.00	4.50	3.00	4.50	2.65	3.05
Hydrogen Peroxide, 100 vol, 140 lb cbys ....lb.	.16	.18½	.16	.18½	.16	.18½
Hydroxylamine Hydrochloride ....lb.	...	3.15	...	3.15	...	3.15
Hypernic, Bags, No. 1 ...lb.	...	.42	...	.42	.40	.42
I						
Indigo, Bengal, bbls ....lb.	2.14	2.20	2.14	2.20	1.63	2.20
Synthetic, liquid ....lb.	.16½	.19	.16½	.19	.16½	.19
Iodine, Resublimed, jars ..lb.	...	2.00	...	2.00	...	2.00
Irish Moss, ord, bales ...lb.	.37	.42½	.30	.42½	.25	.31
Bleached, prime, bales ..lb.	.80	.85	.80	.85	.32	.46
Iron Acetate Liq. 17°, bbls delv ....lb.	.03	.04	.03	.04	.03	.04
Chloride see Ferric Chloride						
Nitrate, coml, bbls ..100 lb.	3.50	4.00	3.50	4.00	3.50	4.00
Isobutyl Carbinol (128-132°C) drs, f.o.b. Wyandotte, Mich. ....lb.	...	.23½	...	.23½	.22½	.23½
tks, ...lb.	...	.21½	...	.21½	...	.21½
Isopropyl Acetate, tks, frt all'd ....lb.	...	.10	.076	.10	.06½	.07½
drs, frt all'd, c-l ....lb.	...	.12	.086	.12	.07½	.08½
Ether, see Ether, isopropyl						
K						
Keiselguhr, dom bags, c-l, Pacific Coast ....ton	22.00	25.00	22.00	25.00	22.00	25.00
L						
Lead Acetate, f.o.b. NY, bbls, (*PC*)						
White, broken ....lb.	...	.12½	.12	.13¼	.11	.12½
cryst, bbls ....lb.	...	.12½	.12	.13¼	.11	.12½
gran, bbls ....lb.	...	.13¼	.12¾	.14	.11¾	.13¼
powd, bbls ....lb.	...	.13¼	.12¾	.14	.11¾	.13¼
Arsenate, East, drs ....lb.	.11	.12	.11	.12	.09	.11
Linoleate, solid, bbls ...lb.	...	.22½	.19	.22½	...	.19
Metal, c-l, NY (*FP*) 100 lb.	5.85	5.90	5.85	5.90	5.70	5.90
Nitrate, 500 lb bbls, wks lb.	.11	.14	.11	.14	.11	.14
Oleate, bbls ....lb.	...	.17¾	.17¾	.20	.18½	.20
Red, dry, 95% Pb_3O_4, delv ....lb.	...	.09	...	09	.08	.08¾
97% Pb_3O_4, delv ....lb.	...	.09½	.09¼	.09½	.084	.086
98% Pb_3O_4, delv ....lb.	...	.10½	.09½	.10½	.0865	.0885
Resinate, fused, bbls ...lb.	.10	.12	.09½	.12	.09½	.16½
Stearate, bbls ....lb.	...	.25	...	.25	...	.25
Titanate, bbls, c-l, f.o.b. wks, frt all'd ....lb.	...	.10¼	...	.10¼	...	.10¼
White, 500 lb bbls, wks, lb.	...	.07½	...	.07½	...	.07½
Basic sulfate, 500 lb bbls, wks ....lb.	...	.07½	.06½	.07½	.06½	.07
Lecithin, ed, dms, cl ....lb.	...	.28½	.28½	.34	...	...
tech, dms, cl ....lb.	...	.26	.26	.28	...	...
Lime, chemical quicklime, f.o.b. wks, bulk ....ton	7.00	13.00	7.00	13.00	7.00	13.00
Hydrated, f.o.b. wks ..ton	8.50	16.00	8.50	16.00	8.50	16.00
Lime Salts, see Calcium Salts						
Lime, sulfur, dealers, tks gal.	no prices		.07½	.08½	...	.07½
drs ....gal.	no prices		.10	.14	.10	.14
Linseed Meal, bgs ....ton	...	36.00	33.50	36.00	23.00	33.00
Litharge, coml, delv, bbls lb.	...	.08	.079	.08	.07	.0760
Lithopone, dom, ordinary, (*PC*). delv, bgs ....lb.	...	.04¼	...	.04¼	.0385	.04¼
bbls ....lb.	...	.04½	...	.04½	.041	.04½
Titanated, bgs ....lb.	...	.056	...	.056	.05¼	.056
bbls ....lb.	...	.0585	.	.0585	.05½	.0585
Logwood, 51°, 600 lb bbls lb.	...	.14	.13	.14	.10½	.13
Solid, 50 lb boxes ....lb.	...	.23½	.22	.23½	.16½	.22

(*FP*) Full Priority. (*PC*) Price Ceiling. (A) Allocation

	Current Market		1942 Low	1942 High	1941 Low	1941 High
M						
Madder, Dutch ....lb.	.24	.30	.22	.30	.22	.25
Magnesite, calc, 500 lb bbls ton	84.00	90.00	74.00	90.00	65.00	80.00
Magnesium Carb, tech, 70 lb bgs, wks ....lb.	...	.06¼	...	.06¼	...	.06¼
Chloride flake, 375 lb bbls, c-l, wks ....ton	...	32.00	...	32.00	...	32.00
Metal, Ingots, c-l ......lb.	...	.27	...	.27	...	...
Oxide, calc tech, heavy bbls, frt all'd ....lb.	...	.26	...	.26	...	.26
Light bbls above basis lb.	...	.26	...	.26	...	.26
USP Heavy, bbls, above basis ....lb.	...	.26	...	.26	...	.26
Palmitate, bbls ....lb.	.33	.35	.33	.35	.33	.35
Silicofluoride, bbls ....lb.	.18	.20	.18	.25	.11	.25
Stearate, bbls ....lb.	.31	.32	.31	.33	.23	.31
Manganese, acetate, drs ..lb.	...	.26½	...	.26½	...	.26½
Borate, 30%, 200 lb bbls lb.	.15	.17	.15	.17	.15	.16
Chloride, bbls ....lb.	.14	nom.	.13	.14	...	.14
Dioxide, tech (peroxide), paper bgs, c-l ....ton	...	74.75	70.00	74.75	...	71.50
Hydrate, bbls ....lb.	...	.82	...	.82	...	.82
Linoleate, liq. drs ......lb.	...	.20	.18	.20	.18	.19½
solid, precip, bbls ....lb.	...	.22	.19	.22	...	.19
Resinate, fused bbls ...lb.	.09	.10½	.08¼	.10½	.08¼	.08½
precip, drs ....lb.	.14½	.15½	.12	.15½	...	.12
Sulfate, tech, anhyd, 90-95%, 550 lb drs ....lb.	...	.11¼	.10½	.11½	.10½	.11½
Mangrove, 55%, 400 lb bbls lb.						
Bark, African ....ton	...	60.00	no prices		34.00	38.00
Mannitol, pure cryst, cs, wks lb.	...	.85	...	.85	.85	.90
commercial grd, 250 lb bbls ....lb.	...	.40	...	.40	.35	.45
Marble Flour, blk ......ton	12.50	14.50	12.50	14.50	12.00	14.50
Mercury chloride (Calomel) lb.	...	2.95	...	2.95	2.70	2.95
Mercury metal ..76 lb. flasks	...	193.00	191.00	210.00	167.00	215.00
Mesityl Oxide, f.o.b. dest, tks ....lb.	...	.10½	...	.10½	.10½	.15
drs, c-l ....lb.	...	.12½	.11½	.12½	.11½	.16
drs, lcl ....lb.	...	.13	.12	.13	.12	.16½
Meta-nitro-aniline ....lb.	.67	.69	.67	.69	.67	.69
Meta-nitro-paratoluidine 200 lb bbls ....lb.	1.05	1.10	1.05	1.10	1.05	1.10
Meta-phenylene diamine 300 lb bbls ....lb.	...	.65	...	.65	...	.65
Meta-toluene-diamine 300 lb bbls ....lb.	...	.70	...	.70	.65	.70
Methanol, denat, grd, drs, c-l frt all'd (*PC*) gal.	...	.66	...	.66	.60	.66
tks, frt all'd ....gal.	...	.60	...	.60	...	.60
Pure, nat, drs, c-l, frt all'd ....gal. *a*	.55½	.61½	.55½	.61½	.35½	.55½
tks, nat ....gal. *a*	.50	.54½	.50	.54½	.30	.50
Synth, pure, drs ....gal. *b*	.34½	.40½	.34½	.40½	...	...
tks, synth ....gal. *b*	.28	.32½	.28	.32½	...	...
Methyl Acetate, tech tks, delv ....lb.	.06	.07	.06	.07	.06	.07
55 gal drs, delv ....lb.	.11	.12½	.11	.12½	.07	.12½
C.P. 97-99%, tks, delv lb.	.09½	.10½	.09½	.10½	.09½	.10½
55 gal drs, delv ......lb.	.10½	.13	.10½	.13	.10½	.13
Acetone, frt all'd, drs gal. *p*	...	.81	...	.81	.37½	.81
tks, frt all'd ......gal. *p*	...	.75	...	.75	.32	.75
Synthetic, frt, all'd, drs ....gal. *p*	.51	.54½	.51	.54½	.37½	.51
tks, frt all'd ...gal.	.43	.45½	.43	.45½	.32	.43
Anthraquinone ....lb.	...	.83	...	.83	...	.83
Butyl Ketone, tks ......lb.	...	.10½	...	.10½	...	.10½
Cellulose, 100 lb. lots, frt all'd ....lb.	.50	.55	.50	.55	...	.55
less than 100 lbs. f.o.b. wks ....lb.	...	.60	...	.60	...	.60
Chloride, 90 lb. cyl ....lb.	.32	.40	.32	.40	.32	.40
Ethyl Ketone, tks, frt all'd lb.	...	.08	...	.08	.06	.08
50 gal drs, frt all'd, c-l lb.	...	.09½	...	.09½	.07	.09½
Formate, drs, frt all'd ..lb.	...	.89	...	.89	...	.89
Hexyl, Ketone, pure, drs lb.	...	.60	...	.60	...	.60
Lactate, drs, frt all'd ...lb.	...	.70	...	.70	.70	.80
Mica, dry grd, bgs, wks ..ton	...	30.00	...	30.00	...	30.00
Michler's Ketone, kgs ....lb.	...	2.50	...	2.50	...	2.50
Mixed Amylnaphthalenes mixed, ref., l-c-l, drs, f.o.b. wks ....lb.	...	.16	...	.16	.16	.19
crude ....lb.	...	.14	...	.14	.14	.15
Monoamylamine, c-l, drs, wks lb.	...	.61	.50	.61	.50	.52
lcl, drs, wks on (100% basis) ....lb.	...	.64	...	.64	...	.55
Monoamylnaphthalene, l-c-l, drs, f.o.b. wks ....lb.	...	.17	...	.17	.17	.20
Monobutylamine, drs (100% basis) c-l, wks ....lb.	...	.48	.40	.48	...	.40
l-c-l, wks ....lb.	...	.51	.51	.64	...	.48
Monochlorobenzene, see "C"						
Monoethanolamine, tks, wks, lb.	...	.23	...	.23	...	.23
Monoethylamine (100% basis) lcl, drs, f.o.b. wks ......lb.	...	.46	...	.46	.35	.65
Monomethylamine, drs, frt all'd, E. Mississippi, c-l lb.	...	.65	...	.65	...	.65
Monomethylparamiosulfate, 100 lb drs ....lb.	3.75	4.00	3.75	4.00	3.75	4.00
Morpholine, drs 55 gal, wks ....lb.	...	.67	...	.67	...	.67

a Producers of natural methanol divided into two groups and prices vary for these two divisions; *b* Country is divided in 4 zones, prices varying by zone: *p* Country is divided into 4 zones.

(*FP*) Full Priority. (*PC*) Price Ceiling.

	Current	Market	1942 Low	1942 High	1941 Low	1941 High
Myrobalans 25%, liq bbls lb.	no prices		no prices		no prices	
50% Solid, 50 lb boxes lb.	no prices		no prices		no prices	
J1 bgs .... ton	no prices		no prices		35.00	48.00
J2 bgs .... ton	no prices		no prices		28.00	39.00
N						
Naphtha, v.m.&p. (deodorized) see petroleum solvents.						
Naphtha, Solvent, water-white, tks .... gal.	...	.27	...	.27	...	.26
drs, c-l .... gal.	...	.31	...	.31	...	.31
Naphthalene, dom, crude bgs. wks .... lb.	2.75	3.00	2.50	3.00	2.25	2.75
Balls, flakes, pks .... lb.	...	.08	...	.08	.06¼	.08
Balls, ref'd bbls, wks .. lb.	...	.08	...	.08	.07	.08
Flakes, re'd, bbls, wks lb.	...	.08	...	.08	.07	.08
Nickel Carbonate, bbls (A) lb.	.36	.36½	.36	.36½	.36	.36½
Chloride, bbls .... lb.	.18	.20	.18	.20	.18	.20
Metal ingot .... lb.	.35	.36	.35	.36	.34	.36
Oxide, 100 lb kgs, NY . lb.	.35	.38	.35	.38	.35	.38
Salt, 400 lb bbls, NY .. lb.	.13	.13½	.13	.13½	.13	.13½
Nicotine, sulfate, 40%, drs, 55 lb drs .... lb.	...	.703	...	.703	...	.703
Nitre Cake, blk .... ton	...	16.00	...	16.00	...	16.00
Nitrobenzene redistilled, 1000 lb drs, wks .... lb.	.08	.09	.08	.09	.08	.09
tks .... lb.	...	.07	...	.07	...	.07
Nitrocellulose, c-l, lcl, wks lb.	.20	.29	.20	.29	.20	.29
Nitrogen Sol. 45½% ammon, f.o.b. Atlantic & Gulf ports, tks, unit ton, N basis	...	1.2158	...	1.2158	...	1.2158
Nitrogenous Mat'l, bgs imp unit	no prices		no prices		no prices	
dom, Eastern wks ... unit	...	3.00	2.75	3.50	2.20	3.00
dom, Western wks ... unit	...	2.90	2.60	3.35	1.75	2.60
Nitronaphthalene, 550 lb bbls lb.	.24	.25	.24	.25	.24	.25
Nutgalls Alleppo, bgs .... lb.	no prices		no prices		.26	.29
O						
Oak Bark Extract, 25%, bbls lb.	...	.0385	.03½	.03¾	.03⅛	.03¾
tks .... lb.	...	.0325	.02	.0325	.02¾	.03
Octyl Acetate, tks, wks .. lb.	...	.15	...	.15	...	.15
Orange-Mineral, 1100 lb cks NY .... lb.	...	.12	...	.12	.11	.11½
Orthoaminophenol, 50 lb kgs lb.	2.15	2.25	2.15	2.25	2.15	2.25
Ortho amyl phenol, l-c-l, drs, f.o.b. wks .... lb.	...	.25	...	.25	.15	.25
Orthoanisidine, 100 lb drs lb.	...	.70	...	.70	...	.70
Orthochlorophenol, drs ... lb.	...	.32	...	.32	...	.32
Orthocresol, 30.4°, drs, wks (A) .... lb.	.17½	.18	.17	.18	.16	.17½
Orthodichlorobenzene, 1000 lb drs .... lb.	.06	.07½	.06	.07½	.06	.07½
Orthonitrochlorobenzene, 1200 lb drs, wks .... lb.	.15	.16	.15	.18	.15	.18
Orthonitroparachlorphenol, tins .... lb.	...	.75	...	.75	...	.75
Orthonitrophenol, 350 lb drs .... lb.	.85	.90	.85	.90	.85	.90
Orthonitrotoluene, 1000 lb drs, wks .... lb.	...	.09	...	.09	...	.09
Orthotoluidine, 350 lb bbls, lcl .... lb.	...	.19	...	.19	...	.19
Osage Orange, cryst, bbls lb.	...	.23	...	.23	.21	.23
51° liquid .... lb.	...	.10	...	.10	...	.10
P						
Paraffin, rfd, 200 lb bgs (*PC*)						
122-127° M P .... lb.	...	.052	...	.052	.04¼	.057
128-132° M P .... lb.	.056	.0585	.056	.0585	.057	.0595
133-137° M P .... lb.	.0615	.0640	.0615	.0640	.06¼	.06½
Para aldehyde, 99%, tech, 55-110 gal drs, wks .. lb.	...	.12	...	.12	.10	.12
Aminoacetanilid, 100 lb kgs .... lb.	...	.85	...	.85	...	.85
Aminohydrochloride, 100 lb kgs .... lb.	1.25	1.30	1.25	1.30	1.25	1.30
Aminophenol, 100 lb kgs lb.	...	1.05	...	1.05	...	1.05
Chlorophenol, drs ...... lb.	...	.32	...	.32	...	.32
Dichlorobenzine 200 lb drs, wks .... lb.	.11	.12	.11	.12	.11	.12
Formaldehyde, drs, wks (*FP*) .... lb.	.23	.24	.23	.24	.23	.24
Nitroacetanilid, 300 lb bbls .... lb.	.45	.52	.45	.52	.45	.52
Nitroaniline, 300 lb bbls, wks .... lb.	...	.45	...	.45	...	.45
Nitrochlorobenzene, 1200 lb drs, wks .... lb.	...	.15	...	.15	...	.15
Nitro-orthotoluidine, 300 lb bbls .... lb.	2.75	2.85	2.75	2.85	2.75	2.85
Nitrophenol, 185 lb bbls lb.	...	.35	...	.35	...	.35
Nitrosodimethylaniline, 120 lb bbls .... lb.	.92	.94	.92	.94	.92	.94
Nitrotoluene, 350 lb bbls lb.	...	.30	...	.30	...	.30
Pentaerythritol, tech, bbls, delv .... lb.	.33½	.35½	.33½	.35½	...	...
Phenylenediamine, 350 lb bbls .... lb.	1.25	1.30	1.25	1.30	1.25	1.30
Toluenesulfonamide, 175 lb. bbls .... lb.	...	.70	...	.70	...	.70
tks, wks .... lb.	...	.31	...	.31	...	.31
Toluenesulfonchloride, 410 lb bbls, wks .... lb.	.20	.22	.20	.22	.20	.22
Toluidine, 350 lb bbls, wks .... lb.	...	.48	...	.48	...	.48

(*FP*) Full Priority. (*PC*) Price Ceiling. (A) Allocation.

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Paris Green, dealers, drs lb.	.24	.26	.24	.26	.23	.25
Pentane, normal, 28-38° C,						
group, 3 tks (*PC*) . . gal.	...	.06½	.06½	.08½	...	.08½
drs, group 3 . . . . gal.	...	.11	.11½	.16	.11½	.16
Perchlorethylene, 10 lb drs,						
frt all'd (*FP*) . . . . . lb.	.08	.08½	.08	.08½	.08	.08½
Petrolatum, dark amber,						
bbls . . . . lb.	...	.03¾	...	.03¾	.02¾	.03½
White, lily, bbls . . . . . . lb.	...	.05¾	...	.05¾	.04¾	.05¾
White, snow, bbls . . . . . lb.	...	.06½	...	.06½	.05½	.06½
Petroleum Ether, 30-60°,						
group 3, tks . . . . gal.	...	.16	...	.16	.13½	.16
drs, group 3 . . . . gal.	...	.18	...	.18	.14½	.18
PETROLEUM SOLVENTS AND DILUENTS						
Cleaners naphthas, group						
3, tks, wks . . . . gal.	...	.07⅛	...	.07⅛	.07	.07⅛
East Coast, tks, wks gal.	...	.11	.10½	.11	.10	.10½
Lacquer diluents, tks						
East Coast . . . . gal.	...	.11	...	.11	.09½	.11
Group 3, tks . . . . gal.	.07⅜	.07½	.07⅜	.08⅛	.06¼	.08⅛
Naphtha, V.M.P., East						
tks, wks . . . . gal.	...	.11	.10½	.11	.09	.11
Group 3, tks, wks . . . gal.	...	.07⅛	...	.07⅛	.06	.07⅛
Petroleum thinner, 43-47,						
East, tks, wks . . . . . . gal.	.08¾	.09½	.08¾	.09½	.08¾	.09½
Group 3, tks, wks . . . gal.	.06	.07	.06	.07	.05⅞	.07
Rubber Solvents, stand						
grd, East, tks, wks . . gal.	...	.11	.10½	.11	.09½	.10½
Group 3, tks, wks . . . gal.	...	.07⅛	...	.07⅛	.06	.07⅛
Stoddard Solvents, East,						
tks, wks . . . . gal.	...	.09½	...	.09½	.083	.09½
Group 3, wks . . . . . . gal.	...	.06⅝	...	.06⅝	.05½	.06⅝
Phenol, 250-100 lb drs . . . . lb.	...	.12½	.12½	.13	.12	.13¾
tks, wks (*FP*) (A) . . . . lb.	...	.11½	.11½	.12	.11	.12
Phenyl-Alpha-Naphthylamine,						
100 lb kgs . . . . lb.	...	1.35	...	1.35	...	1.35
Phenyl Chloride, drs . . . . . lb.	...	.17	...	.17	...	.17
Phenylhydrazine Hydro-						
chloride, com . . . . lb.	...	1.75	...	1.75	...	1.50
Phloroglucinol, tech, tins . . lb.	15.00	16.50	15.00	16.50	15.00	16.50
CP, tons . . . . lb.	20.00	22.00	20.00	22.00	20.00	22.00
Phosphate Rock, f.o.b. mines						
70% basis . . . . ton	...	2.70	2.40	2.70	2.15	2.40
72% basis . . . . ton	...	3.20	3.00	3.20	2.50	3.00
Florida Pebble, 68% basis ton	...	2.00	2.00	2.20	1.90	2.00
75-74% basis . . . . ton	...	4.00	...	4.00	...	2.90
Tennessee, 72% basis . . ton	...	5.30	5.00	5.50	4.50	5.00
Phosphorus Oxychloride 175						
lb. cyl (*FP*) . . . . lb.	.15	.18	.15	.18	.15	.18
Red, 110 lb cases . . . . . . lb.	.40	.44	.40	.44	.40	.44
Sesquisulfide, 100 lb cs . lb.	.38	.42	.38	.42	.38	.42
Trichloride, cyl . . . . lb.	.15	.16	.15	.16	.15	.16
Yellow, 110 lb cs, wks lb.	.18	.20	.18	.20	.18	.20
Phthalic Anhydride, 100 lb						
drs, wks (A) . . . . lb.	.14½	.15½	.14½	.15½	.14½	.15½
Pine Oil, 55 gal drs or bbls						
Destructive dist . . . . . . lb.	.72	.74	.72	.74	.50	.65
Steam dist wat wh bbls gal.	1.00	nom	1.00	1.10	.59	.68
Pitch Hardwood, wks . . . ton	23.75	24.00	23.75	24.00	23.75	24.00
Coaltar, bbls, wks . . . . ton	19.00	22.00	19.00	22.00	19.00	22.00
Burgundy, dom, bbls, wks lb.	.06	.06½	.06	.06½	.06	.06½
Imported . . . . lb.	no prices		no prices		no prices	
Petroleum, see Asphaltum in Gums' Section.						
Pine, bbls . . . . bbl.	...	6.00	6.00	7.00	6.00	7.00
Polyamylnaphthalene, l-c-l,						
drs, f.o.b. wks . . . . lb.	...	.25	...	.25	.25	.30
Potash, Caustic, wks, sol . . lb	.06¼	.06¾	.06¼	.06¾	.06¼	.06¾
flake . . . . lb.	...	.07	...	.07	...	.07
liquid, tks . . . . lb.	...	.02⅞	...	.02⅞	...	.02⅞
Manure Salts, Dom						
30% basis, blk . . . . . unit	...	.60	...	.60	...	.60
POTASSIUM						
Potassium Abietate, bbls . . lb.	...	.08	...	.08	...	.08
Acetate, tech, bbls, delv lb.	...	.28	...	.28	.26	.28
Bicarbonate, USP, 320 lb						
bbls . . . . lb.	.19	.21	.14	.21	.14	.17
Bichromate Crystals, 725						
lb cks *(*FP*) . . . . . . lb.	...	.09⅜	...	.09⅜	.08⅞	.09⅜
Binoxalate, 30 lb bbls . . lb.	...	.23	...	.23	...	.23
Bisulfate, 100 lb kgs . . . lb.	.15½	.18	.15½	.18	.15½	.18
Carbonate, 80-85% calc 800						
lb cks . . . . lb.	.06½	.06¾	.06½	.06¾	.06½	.06¾
liquid, tks . . . . lb.	...	.0275	..	.0275	...	.0275
drs, wks . . . . lb.	.03	.03⅛	.03	.03⅛	.03	.03⅛
Chlorate crys, 112 lb kgs,						
wks (*FP*) (A) . . . . . . lb.	nom.	.11	nom.	.11	...	.11
gran, kgs . . . . lb.	.12	.14½	.12	.14½	.12	.14½
powd, kgs . . . . lb.	.09¾	.10	.09¾	.10	.09½	.10
Chloride, crys, bbls . . . . lb.	.08	nom.	.08	nom.	.04	.08
Chromate, kgs (*FP*) . . . lb.	.24	.27	.24	.27	.24	.27
Cyanide, drs . . . . lb.	...	.55	...	.55	...	.55
Iodide, 250 lb bbls . . . . lb.	1.44	1.48	1.44	1.48	1.35	1.38
Metabisulfite, 300 lb bbls lb.	.18	.20	.18	.20	.18	.21
Muriate, bgs, dom, blk unit	.56	.58	.56	.58	.53½	.58
Oxalate, bbls . . . . lb.	.28	.30	.28	.30	.25	.30
Perchlorate, kgs,						
wks (FP) (A) . . . . . . lb.	.09½	.11	.09½	.11	.09½	.11

* Spot price is ⅛c higher.

(*FP*) Full Priority. (*PC*) Price Ceiling. (A) Allocation.

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Potassium (continued):						
Permanganate, USP, crys, 500 & 1000 lb drs, wks (FP) ....lb.	.19¾	.20¼	.19¾	.21	.19¼	.21
Prussiate, red, bbls ....lb.	.70	.75	.70	.75	no prices	
Yellow, bbls ....lb.	.17	.19	.17	.19	.16	.19
Sulfate, 90% basis, bgs ton	...	36.25	...	36.25	...	36.25
Titanium Oxalate, 200 lb bbls ....lb.	...	.45	...	.45	...	.40
Pot & Mag Sulfate, 48% basis bgs ....ton	...	26.00	...	26.00	26.00	27.00
Propane, group 3, tks (PC) lb.	.02¾	.03¾	.02¾	.03¾	.03¾	.04
Putty, com'l, tubs ....100 lb.	...	3.15	...	3.15	...	3.15
Linseed Oil, kgs ...100 lb.	...	5.00	...	5.00	...	5.00
Pyrethrum, conc liq: (A)						
2.4% pyrethrins, drs, frt all'd ....gal.	...	5.75	4.30	5.75	4.40	4.95
3.6% pyrethrins, drs, frt all'd ....gal.	...	8.53	6.35	8.53	6.60	7.20
Flowers, coarse, bgs ...lb.						
bgs ....lb.	.27	.28	.21	.28	.20	.25
Fine powd, bbls .....lb.	...	.23	.22	.29	.21	.26
Pyridine, denat, 50 gal drs gal.	...	1.71	...	1.71	...	1.71
Refined, drs ....lb.	...	.46	...	.46	...	.48
Pyrites, Spanish cif Atlantic ports, blk ....unit	no prices		no prices		no prices	
Pyrocatechin, CP, drs, tins lb.	2.15	2.40	2.15	2.40	2.15	2.40
Q						
Quebracho, 35% liq tks ..lb.	...	.05¼	...	.05¼	.03¾	.05½
450 lb bbls, c-l ....lb.	...	.05	...	.05	.04¼	.05
Solid, 63%, 100 lb bales cif ....lb.	...	.04⅞	...	.04⅞	...	.04⅞
Clarified, 64% bales ..lb.	...	.05	...	.05	.05	.05⅛
Quercitron, 41 deg liq, 450 lb. bbls ....lb.	...	.10	...	.10	.08½	.09½
Solid, drs ....lb.	...	.18½	.18	.18½	.11	.16½
R						
R Salt, 250 lb bbls, wks ..lb.	...	.55	...	.55	...	.55
Resorcinol, tech cans .....lb.	.68	.74	.68	.74	.68	.74
Rochelle Salt, cryst ......lb.	...	.43½	...	.43½	.32½	.43½
Powd, bbls ....lb.	...	.42½	...	.42½	.31½	.42½
Rosin Oil, bbls, first run gal.	...	.57	.48	.57	.40	.50
Second run ....gal.	...	.59	.50	.59	.42	.56
Third run, drs ....gal.	...	.63	.54	.63	.46	.57
Rosins 600 lb bbls, 100 lb unit ex, yard NY:**						
B	...	3.90	2.96	3.90	2.06	3.55
D	...	4.05	2.73	4.05	2.08	3.55
E	...	4.09	3.06	4.09	2.07	3.62
F	...	4.12	3.27	4.13	2.08	3.59
G	...	4.12	3.52	4.13	2.18	3.52
H	...	4.13	3.53	4.13	2.27	3.50
I	...	4.13	3.53	4.13	2.26	3.50
K	...	4.13	3.56	4.14	2.36	3.61
M	...	4.15	3.66	4.15	2.38	3.68
N	...	4.16	3.67	4.15	2.47	3.71
WG	...	4.21	3.69	4.81	2.79	4.52
WW	...	4.25	3.73	5.20	3.05	4.57
X	...	4.25	3.73	5.20	3.10	4.57
Rosins, Gum, Savannah (280 lb. unit):**						
B	...	3.25	2.08	3.25	1.31	3.00
D	...	3.40	2.31	3.40	1.51	3.00
E	...	3.44	2.41	3.44	1.60	3.07
F	...	3.47	2.62	3.47	1.62	3.04
G	...	3.47	2.87	3.47	1.60	2.97
H	...	3.48	2.88	3.48	1.63	2.97
I	...	3.48	2.88	3.48	...	2.98
K	...	3.48	2.91	3.48	1.84	3.06
M	...	3.48	3.05	3.48	2.01	3.13
N	...	3.48	3.05	3.48	2.01	3.13
WG	...	3.51	3.05	3.51	2.65	3.16
WW	...	3.56	3.06	3.56	2.76	3.97
X	...	3.60	3.10	3.60	2.96	4.02
Rosin, Wood, c-l, FF grade, NY	...	3.60	3.10	3.60	2.96	4.02
Rotten Stone, bgs mines ton	25.00	37.50	25.50	37.50	25.50	37.50
Imported, lump, bbls ..lb.	no prices		no prices		no prices	
Powdered, bbls ......lb.	no prices		no prices		no prices	
S						
Sago Flour, 150 lb bgs ..lb.	.05	.05¼	.04¾	.05¾	.03½	.05½
Sal Soda, bbls wks ...100 lb.	...	1.20	...	1.20	...	1.20
Salt Cake, 94-96%, c-l, bulk wks ....ton	...	15.00	...	15.00	13.00	17.00
Chrome, c-l, wks ......ton	...	16.00	..	16.00	...	16.00
Saltpetre, gran, 450-500 lb bbls ....lb.	...	.082	...	.082	.076	.082
Cryst, bbls ....lb.	...	.092	...	.092	.086	.092
Powd, bbls ....lb.	...	.092	...	.092	.086	.092
Satin, White, pulp, 550 lb bbls ....lb.	.01¼	.01½	.01¼	.01½	.01¼	.01½
Schaeffer's Salt, kgs .....lb.	...	.46	...	.46	...	.46

** Jan. 30, 1941, high and low based on 280 lb. unit. Oct. 30 prices. r Bone dry prices at Chicago 1c higher; Boston ½c; Pacific Coast 2c; Philadelphia deliveries f.o.b. N. Y., refined 6c higher in each case; (FP) Full Priority. (PC) Price Ceiling. (A) Allocation

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Shellac, Bone dry, bbls ..lb. s	...	.42½	.39	.42½	.26	.40‡
Garnet, bgs ....lb.	...	.389	.37	.39	.20	.39
Superfine, bgs ....lb. s	...	.366	.32	.366	.16½	.34
T. N., bgs ....lb. s	...	.355	.31	.355	.16	.33
Silver Nitrate, vials ......oz.	...	.32⅛	.26⅞	.32⅛	.24	.26⅞
Slate Flour, bgs, wks ....ton	11.00	12.00	9.00	12.00	9.00	10.00
Soda Ash, 58% dense, bgs, c-l, wks ....100 lb.	...	1.15	...	1.15	.	1.15
58% light, bgs ....100 lb.	1.05	1.13	1.05	1.13	1.05	1.08
blk ....100 lb.	...	.90	...	.90		.90
paper bgs ....100 lb.	1.05	1.08	1.05	1.08	1.05	1.08
bbls ....100 lb.	...	1.35	...	1.35	1.35	1.45
Caustic, 76% grnd & flake, drs ....100 lb.	...	2.70	...	2.70	...	2.70
76% solid, drs .....100 lb.	...	2.30	...	2.30	...	2.30
Liquid sellers, tks ..100 lb.	...	2.00	...	2.00	...	2.00
SODIUM						
Sodium Abietate, drs .....lb.	...	.11	...	.11	...	.11
Acetate, 60% tech, gran. powd, flake, 450 lb bbls wks ....lb.	...	.05	...	.05	.04	.06
90%, bbls 275 lb delv lb.	.06½	.07	.06½	.07	.06	.07
anhyd, drs, delv .....lb.	.08½	.10	.08½	.10	.08¼	.10
Alginate, drs ....lb.	...	.79	.69	.79	.39	.73
Antimoniate, bbls ......lb.	.15	.15½	.15	.15½	.14	.15½
Arsenate, drs ....lb.	...	.08	...	.08	.07	.08¾
Arsenite, liq, drs ......gal.	...	.35	...	.35	...	.35
Dry, gray, drs, wks ..lb.	...	.08½	.06¾	.08½	.06½	.09¼
Benzoate, USP kgs ....lb.	.46	.50	.46	.50	.46	.50
Bicarb, powd, 400 lb bbl, wks ....100 lb.	...	1.85	1.70	1.85	...	1.70
Bichromate, 500 lb cks, wks (FP) ....lb.	...	.07⅜	...	.07⅜	.06⅞	.07½
Bisulfite, 500 lb bbls, wks lb.	.03	.031	.03	.031	.03	.031
35-40% sol bbls, wks 100 lb.	1.35	1.80	1.35	1.80	1.40	1.80
Chlorate, bgs, wks (A) lb.	...	.06¼	...	.06¼	...	.06¼
Cyanide, 96-98%, 100 & 250 lb drs, wks ......lb.	.14	.15	.14	.15	.14	.15
Diacetate, 33-35% acid, bbls, lcl, delv ....lb.	.09½	.10½	.09½	.10½	.09	.10
Fluoride, white 90%, 300 lb bbls, wks ....lb.	...	.08	...	.08	.07	.08
Hydrosulfite, 200 lb bbls, f.o.b. wks ....lb.	.17	.18	.17	.18	.17	.18
Hyposulfite, tech, pea crys 375 lb bbls, wks ..100 lb.	2.75	3.00	2.75	3.00	...	2.80
Tech, reg cryst, 375 lb bbls, wks ....100 lb.	...	2.45	...	2.45	...	2.45
Iodide, Jars ....lb.	...	2.42	...	2.42	...	2.42
Metanilate, 150 lb bbls ..lb.	...	.40	...	.40	.41	nom.
Metasilicate, gran, c-l, wks ....100 lb.	...	2.50	...	2.50	2.35	2.50
cryst, drs, c-l, wks 100 lb.	...	3.05	...	3.05	...	3.05
Anhydrous, wks, c-l, drs ....100 lb.	...	4.00	...	4.00	3.75	4.00
wks, lcl, drs ...100 lb.	...	5.05	...	5.05	5.05	5.05
Monohydrated, bbls ....lb.	...	.03	.026	.03	.023	.026
Naphthenate, drs ......lb.	.12	.19	.12	.19	.12	.19
Naphthionate, 300 lb bbl lb.	...	.50	...	.50	...	.50
Nitrate, 92% crude, 200 lb. bgs. c-l, NY (A) ...ton	...	29.35	...	29.35	28.70	29.35
100 bgs, same basis ..ton	...	30.05	...	30.05	29.40	30.05
Bulk ....ton	...	27.00	...	27.00	...	27.00
Nitrite, 500 lb bbls ....lb.	...	.06¾	...	.06¾	.06¾	.11½
Orthochlorotoluene, sulfonate, 175 lb bbls, wks lb.	.25	.27	.25	.27	.25	.27
Orthosilicate, 300 lb drs, c-l anhyd. ....lb.	...	.04½	.04½	.04¾	.04½	.04¾
hyd, flake, 300 lb bbls, cl, f.o.b. wks ....lb.	...	.0315	.03	.0315	.0285	.03
Perborate, drs, 400 lb ..lb.	...	.14¾	...	.14¾	.14¾	.15¼
Peroxide, bbls, 400 lb ..lb.	...	.17	...	.17	...	.17
Phosphate, di-sodium, tech, 310 lb bbls, wks 100 lb.	2.75	2.90	2.75	2.90	2.30	2.90
bgs, wks ......100 lb.	2.55	2.70	2.55	2.70	2.10	2.70
Tri-sodium, tech, 325 lb. bbls, wks ......100 lb.	...	2.90	2.90	3.05	2.45	3.05
bgs, wks ......100 lb.	...	2.70	2.70	2.85	2.25	2.85
Picramate, 160 lb kgs ..lb.	...	.65	...	.65	...	.65
Prussiate, Yellow, 350 lb bbls, wks ....lb.	...	.11	...	.11	.10½	.11
Pyrophosphate, anhyd, 100 lb bbls f.o.b. wks frt eq lb.	.0528	.0610	.0528	.06	.0510	.0610
Sesquisilicate, drs, c-l, wks ....100 lb.	...	3.05	...	3.05	...	3.05
Silicate, 60°, 55 gal drs, wks ....100 lb.	...	1.70	...	1.70	...	1.70
40°, 55 gal drs, wks 100 lb.	...	.80	...	.80	...	.80
tks, wks ......100 lb.	...	.65	...	.65	...	.65
Silicofluoride, 450 lb bbls NY ....lb.	.09	.14½	.09	.15	.09¾	.15
Stannate, 100 lb drs ....lb.	.33½	.36½	.33½	.36½	.32½	.37
Stearate, bbls ....lb.	.19	.24	.19	.24	.19	.24
Sulfanilate, 400 lb bbls lb.	.16	.18	.16	.18	.16	.18
Sulfate, Anhyd, 550 lb bgs c-l, wks ....100 lb. t	1.70	1.90	1.70	1.90	1.45	1.90
Sulfide, 80% cryst, 440 lb. bbls, c-l, wks ....lb.	...	.024	...	.024	.02¼	.03
Solid, 650 lb drs, c-l, wks ....lb.	...	.0315	...	.0315	.03	.03¾
Sulfite, powd, 400 lb bbls wks ....lb.	...	.05¼	...	.05¼	...	.05¼

s T. N. and Superfine prices quoted f.o.b. N. Y. and Boston; Chicago prices 1c higher; Pacific Coast 3c; Philadelphia f.o.b. N. Y. t Bags 15c lower; (PC) Price Ceiling. (A) Allocation. ‡ Add 3½c per lb to cover marine and war risk insurance.

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Sodium (continued)						
Sulfocyanide, drs .... lb.	.55	.65	.55	.65	.28	.65
Sulforicinoleate, bbls ... lb.	...	.12	...	.12	...	.12
Supersilicate (see sodium sesquisilicate)						
Tungstate, tech, crys, kgs (A) .... lb.	no prices		no prices		no prices	
Sorbitol, drs, wks .... lb.	...	.17¾	...	.17¾	.14¼	.17¾
Spruce, Extract, ord, tks .. lb.	...	.01½	.01¼	.01½	.01⅛	.01¼
Ordinary, bbls .... lb.	...	.02⅛	.01¾	.02⅛	.01⅛	.01⅜
Super spruce ext, tks .. lb.	...	.01½	...	.01½	.01⅛	.01½
Super spruce ext, bbls .. lb.	...	.02	...	.02	.01⅞	.02
Super spruce ext, powd, bgs .... lb.	...	.04½	.04	.04½	...	.04
Starch, Pearl, 140 lb bgs 100 lb.	...	3.10	...	3.10	2.90	3.10
Powd, 140 lb bgs .. 100 lb.	...	3.20	...	3.20	3.05	3.80
Potato, 200 lb bgs .... lb.	...	.0637	.061	.0637	.04½	.0585
Imp, bgs .... lb.	no prices		no prices		no prices	
Rice, 200 lb bbls ..... lb.	.09	.10	.09	.10	.07½	.09½
Sweet Potato, 240 lb bbls, f.o.b. plant ..... 100 lb.	nom.	7.00	nom.	7.00	nom.	7.00
Wheat, thick, bgs ... lb.	...	.05	...	.05	...	.05
Strontium, carbonate, 600 lb bbls, wks .... lb.	no prices		no prices		no prices	
Nitrate, 600 lb bbls, NY lb.	.07¾	.08¾	.07¾	.08¾	.07¾	.08¾
Sucrose, octa-acetate, den, grd, bbls, wks .... lb.	...	.45	...	.45	...	.45
tech, bbls, wks .... lb.	...	.40	...	.40	...	.40
SULFUR						
Sulfur, crude, f.o.b. mines ton	...	16.00	...	16.00	...	16.00
Flour, com'l, bgs ... 100 lb.	1.65	1.95	1.65	1.95	1.40	1.95
bbls .... 100 lb.	1.95	2.50	1.95	2.50	1.95	2.50
Rubbermakers, bgs . 100 lb.	...	2.20	2.05	2.20	...	2.05
bbls .... 100 lb.	...	2.35	...	2.35	...	2.35
Extra fine, bgs .... 100 lb.	...	2.35	...	2.35	...	2.35
Superfine, bgs ..... 100 lb.	2.65	2.80	2.65	2.80	2.65	2.80
bbls .... 100 lb.	2.25	3.10	2.25	3.10	2.25	3.10
Flowers, bgs .... 100 lb.	3.05	3.35	3.05	3.35	2.80	3.35
bbls .... 100 lb.	3.40	3.70	3.40	3.70	3.15	3.70
Roll, bgs .... 100 lb.	2.40	2.70	2.40	2.70	2.15	2.70
bbls .... 100 lb.	2.30	2.85	2.30	2.85	2.30	2.85
Sulfur Chloride, 700 lb drs, wks .... lb.	.03	.08	.03	.08	.03	.08
Sulfur Dioxide, 150 lb cyl lb.	.07	.08	.07	.09	.07	.09
Multiple units, wks ... lb.	.04½	.06	.04½	.07	.04½	.07
tks, wks .... lb.	.04	.06	.04	.06	.04	.06
Refrigeration, cyl, wks . lb.	.13	.21	.13	.40	.16	.40
Multiple units, wks ... lb.	...	.06½	.06½	.10	.07½	.10
Sulfuryl Chloride .... lb.	.15	.40	.15	.40	.15	.40
Sumac, Italian, grd ..... ton	no prices		no prices		no prices	
Extract, 42°, bbls ..... lb.	...	.08	.06¼	.08	.06	.08
Superphosphate, 16% bulk, wks .... ton	10.10	10.74	10.10	10.80	8.50	10.00
Run of pile .... ton	9.60	10.24	9.60	10.24	8.00	9.60
Triple, 40-48%, a.p.a. bulk, wks, Balt. unit ..... ton	...	.85	.80	.85	.68	.80
T						
Talc, Crude, 100 lb bgs, NY ton	12.50	24.50	12.50	24.50	14.00	16.00
Ref'd 100 lb bgs, NY ton	17.25	19.25	17.25	19.25	17.25	19.25
French, 220 lb bgs, NY ton	no prices		no prices		no prices	
Ref'd, white bgs, NY ton	no prices		no prices		no prices	
Italian, 220 lb bgs to arr ton	no prices		no prices		no prices	
Ref'd, white bgs, NY ton	no prices		no prices		no prices	
Tankage, Grd, NY .... unit s	...	4.60	4.25	4.85	2.35	4.10
Ungrd .... unit s	...	4.96	5.25	5.70	2.35	5.10
Fert grade, f.o.b. Chgo unit s	...	5.37	5.60	5.90	2.35	5.60
South American cif unit s	...	nom.	5.05	5.60	2.60	4.75
Tapioca Flour, high grade, bgs .... lb.	.04¾	.07¼	.04	.07¼	.03	.06¾
Tar Acid Oil, 15%, drs . gal.	...	.27½	...	.27½	.22	.24
25% drs (A) .... gal.	...	.31½	...	.31½	.25	.27½
Tar, pine, delv, drs .... gal.	...	.33	.32½	.33	.26	.29
tks, delv, E. cities .... gal.	...	.24½	.24	.24½	...	.22
Tartar Emetic, tech, bbls lb.	...	.47¾	...	.47¾	.36¾	.47¾
USP, bbls .... lb.	.52¾	.53	.52¾	.53	.42	.53
Terpineol, den grade, drs lb.	...	.17	...	.17	...	.17
Tetrachlorethane, 650 lb drs lb.	.08	.08½	.08	.08½	.08	.08½
Tetrachlorethylene, drs, tech lb.	.08	.09	.08	.09	.08	.09
Tetralene, 50 gal drs, wks lb.	...	.19	...	.19	.19	.21
Thiocarbanilid, 170 lb bbls lb.	...	.24	...	.24	...	.24
Tin, crystals 500 lb bbls, wks lb	.39	.39½	.39	.39½	.38	.40
Metal, NY (*PC*) (A) . lb.	...	.52	...	.52	.501	.52¾
Oxide, bbls, wks .... lb.	...	.55	.55	.57	.54	.56
Tetrachloride, 100 lb drs, wks .... lb.	no prices		no prices		.25¼	.31
Titanium Dioxide, 300 lb bbls (*PC*) .... lb.	...	.14½	...	.14½	.13¾	.14½
Barium Pigment, bbls .. lb.	.05¾	.06½	.05¾	.06½	.05¾	.06½
Calcium Pigment, bbls . lb.	.05½	.05¾	.05½	.05¾	.05½	.05¾
Titanium tetrachloride, drs, f.o.b. Niagara Falls .. lb.	.32	.45	.32	.45	.32	.45
Titanium trichloride 23% sol, bbls f.o.b. Niagara Falls lb.	.22	.26	.22	.26	.22	.26
20% solution, bbls ... lb.	.175	.215	.175	.215	.175	.215
Toluidine, mixed, 900 lb drs, wks .... lb.	...	.26	...	.26	...	.26
Toluol, drs, wks (*FP*) (A) .... gal.	...	.33	...	.33	.32	.33
tks, frt all'd (*FP*) .... gal.	...	.28	...	.28	.27	.28
Toner Lithol, red, bbls ... lb.	.55	.60	.55	.60	.55	.60
Para, red, bbls .... lb.	.70	.75	.70	.75	.70	.75
Toluidine, bgs .... lb.	...	1.05	...	1.05	...	1.05
Triacetin, 50 gal drs, wks, lb.	...	.26	...	.26	...	.26
Triamyl Borate, lcl, drs, wks, lb.	...	.33	...	.33	.27	.33
Triamylamine, drs, lcl, wks, drs .... lb.	...	1.01	...	1.01	...	1.01

(*FP*) Full Priority. (A) Allocation

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Tributylamine, lcl, drs, f.o.b. wks lb.	...	.81		.81	...	.81
Tributyl citrate, drs, frt all'd lb.	...	.34	.24	.34	.24	.26
Tributyl Phosphate, frt all'd lb.	...	.47	...	.47	.42	.47
Trichlorethylene, 600 lb drs, frt all'd E. Rocky Mts lb.	(FP)	.08	...	.08	.08	.09
Tricresyl phosphate, tech, (FP) drms cl dlvd lb.	.25	.31	.25	.31	.22	.36½
Triethanolamine, 50 gal drs, wks lb.	...	.19	...	.19	...	.19
tks, wks lb.	...	.18	...	.18	...	.18
Triethylamine, lcl, drs, f.o.b. wks lb.	...	1.16	...	1.16	...	1.16
Triethylene glycol, drs, wks lb.	...	.26	...	.26	...	.26
Trihydroxyethylamine Oleate, bbls lb.	...	.30	...	.30	...	.30
Stearate bbls lb.	...	.30	...	.30	...	.30
Trimethyl Phosphate, drs, lcl, f.o.b. dest. lb.	.54	.56	.54	.56	.50	.54
Trimethylamine, c-l, drs, frt all'd E. Mississippi lb.	...	.85	...	.85	.85	1.00
Triphenylguanidine lb.	.58	.60	.58	.60	.58	.60
Triphenyl Phosphate, drs (FP) lb.	.31	.32	.31	.32	.33	.38
Tripoli, airfloated, bgs, wks ton	...	21.50	21.00	26.00	21.00	26.00
Turpentine (Spirits), c-l, NY dock, bbls gal.	...	.78	.69¼	.82½	.45	.83
Savannah, bbls.* gal.	...	.64¼	.55¼	.70½	.33½	.72½
Wood Steam dist, drs, c-lcl, NY gal.	...	.64	.61	.80	.35	.76
tks, delv E. cities gal.	...	.59	.56	.72	...	...
Wood, dest dist, cl-lcl, drs, delv E. cities gal.	.55	.58	.55	.70	.35	.65
tks, delv E. cities gal.	...	.50	.50	.58	...	...
U						
Urea, pure 112 lb cases lb.	...	.12	...	.12	...	.12
Fert grade, bgs, c. i. f. S.A. points ton	no prices		no prices		no prices	
Dom f.o.b., wks ton	...	80.00	...	80.00	...	85.00
Urea Ammonia, liq., nitrogen basis ton	...	121.58	...	121.58	...	121.58
V						
Valonia beard, 42%, tannin bgs ton	no prices		no prices		no prices	
Cups, 32% tannin bgs ton	no prices		no prices		no prices	
Extract, powd, 63% lb.	no prices		no prices		no prices	
Vanillin, ex eugenol, 25 lb tins, 2000 lb lots lb.	...	2.60	2.00	2.60	...	2.60
Ex-guaiacol lb.	...	2.35	...	2.35	2.50	2.55
Ex-lignin lb.	...	2.35	...	2.35	2.50	2.55
Vermilion, English, kgs lb.	3.12	3.17	3.12	3.17	3.12	3.17
W						
Wattle Bark, bgs ton	41.00	43.00	41.00	43.00	37.50	43.00
Extract, 60°, tks, bbls lb.	.04475	.046	.04475	.0475	.03⅞	.05
Wax, Bayberry, bgs lb.	.18	.20	.18	.20	.18	.20
Bees, bleached, white 500 lb slabs, cases lb.	...	.61	.58	.61	.36½	.56
Yellow, African, bgs lb.	...	.49	...	.49	.30	.47
Brazilian, bgs lb.	...	.50	...	.50	.31	.50
Refined, 500 lb slabs, cases lb.	.59	.60	.55	.60	.35	.52
Candelilla, bgs lb.	...	.38	.33	.38	.19	.33
Carnauba, No. 1, yellow, bgs lb.	.88	.89	.87	.89	.68	.88
No. 2, yellow, bgs lb.	.87	.88	.86	.88	.66	.85
No. 2, N C., bgs lb.	.84	.85	.82	.85	.62	.79
No. 3, Chalky, bgs lb.	.77	.78	.75	.78	.55	.78
No. 3, N. C., bgs lb.	.78	.79	.77	.79	.58	.79
Ceresin, dom, bgs lb.	.13½	.14	.13½	.14	.11	.14
Japan, 224 lb cases lb.	.40	.45	.30	.45	.16½	.35
Montan, crude, bgs lb.	.45	.46	.45	.46	.45	.46
Paraffin, see Paraffin Wax.						
Spermaceti, blocks, cases lb.	.26	.27	.24	.27	.24	.25
Cakes, cases lb.	.27	.28	.25	.28	.25	.26
Wood Flour, c-l, bgs ton						
bgs, c-l, wks ton	24.00	25.00	24.00	25.00	24.00	25.00
Whiting, chalk, com 200 lb	18.00	22.00	18.00	22.00	18.00	19.00
Gilders, bgs, c-l, wks ton	20.00	24.00	16.00	24.00	16.00	20.00
X						
Xylol, frt all'd, East 10° tks, wks gal.	...	.27	...	.27	...	.29
Com'l tks, wks, frt all'd gal.	...	.27	...	.27	.26	.27
Xylidine, mixed crude, drs lb.	.35	.36	.35	.36	.35	.36
Z						
Zein, bgs, 1000 lb lots, wks lb.	...	.25	.20	.25	...	.20
Zinc Acetate, tech, bbls, lcl, delv lb.	.16	.17	.16	.17	.15	.16
Arsenite, bgs, frt all'd lb.	...	.12	...	.12	...	.12
Carbonate tech, bbls, NY lb.	.14	.20	.14	.20	.14	.20
Chloride fused, 600 lb drs, wks lb.	...	.05	...	.05	...	.05
Gran, 500 lb drs, wks lb.	...	.0575	...	.0575	...	.0575
Soln 50%, tks, wks 100 lb.	...	2.50	...	2.50	2.25	2.50

(FP) Full priority. (PC) Price Ceiling. Oct. 30 price.

Prices Current

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Zinc (continued)						
Cyanide, 100 lb drs ....lb.	.33	.37	.33	.37	.33	.37
Dust, 500 lb bbls, c-l, delv lb.	...	.1035	...	.1035	.09¼	.1035
Metal, high grade slabs, c-l,						
NY (FP) (PC) 1000 lb.	...	8.65	...	8.65	7.65	8.64
E. St. Louis .....100 lb.	...	8.25	...	8.25	7.25	8.25
Oxide, Amer, bgs, wks lb.	...	.07¼	...	.07¼	.06½	.07¼
French 300 lb bbls, wks lb.	...	.07¼	...	.07¼	.06¾	.07¼
Palmitate, bbls ....lb.	.32	.33	.32	.33	.24½	.33
Resinate, fused, pale bbls lb.	.11	.12	.10	.12	...	.10
Stearate, 50 lb bbls ....lb.	.30	.31	.30	.31	.22	.31
Sulfate, crys, 40 lb bbls						
wks ....lb.	...	.360	.360	.365	.315	.365
Flake, bbls ....lb.	...	.410	.405	.410	.335	.405
Sulfide, 500 lb bbls, delv lb.	...	.08½	.08	.08½	...	.08
bgs, delv (PC) ......lb.	.14	.14¼	.14	.14¼	.08	.13¼
Sulfocarbolate, 100 lb kgs lb.	.24	.25	.24	.29	.03⅛	.07¾
Zirconium Oxide, crude,						
70-75% grd, bbls, wks ton	75.00	100.00	75.00	100.00	75.00	100.00

Oils and Fats

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Babassu, tks, futures .....lb.	...	.111	no prices		...	.06
Castor, No. 3, 400 lb drs lb.	...	.13¾	.12½	.13¾	.0180	.12½
(A) (PC) Blown,						
400 lb drs ....lb.	...	.15¼	.14	.15¼	.11¾	.14
China Wood, drs, spot NY lb.	...	.39	.39	.40⅛	.27¼	.37¼
Tks, spt NY (PC)...lb.	...	.3875	.3875	...	.26¼	.35½
Coconut, edible, drs NY ..lb.	...	.0985	...	...	.08	.15½
Manila, tks, NY (PC)..lb.	...	.0835	...	...	.03⅜	.10
Tks, Pacific Coast ....lb.	no prices		no prices		...	.03¼
Cod, Newfoundland, 50 gal						
bbls ....gal.	...	.90	.85	.90	.07½	.80
Copra, bgs, NY ....lb.	no prices		no prices		.0180	.04¼
Corn, crude, tks, mills ...lb.	.12¾	nom.	.12½	.12¾	.06⅝	.13
Refd, 375 lb bbls, NY ..lb.	.15½	nom.	.15	.15½	.14¾	.16
Degras, American, 50 gal						
bbls, NY ....lb.	.12½	nom.	.11½	.12½	.07½	.08¾
Greases, Yellow ....lb.	...	.0929	...	.0929	.04¾	.08½
White, choice, bbls, NY lb.	...	.097	...	.097	.05	.09
Lard, Oil, Edible, prime ..lb.	...	.16	.15½	.16	.08½	.14½
Extra, bbls ....lb.	...	.15¼	.15	.15¼	.08¼	.13¾
Extra, No. 1, bbls .....lb.	...	.14⅝	.14½	.14⅝	.08	.13¾
Linseed, Raw less than 5						
drs lots ....lb.	...	.145	.125	.149	.091	.123
drs, c-l, spot ....lb.	.135	.137	.117	.143	.095	.190
Tks ....lb.	.126	.128	.108	.134	.084	.1060
Menhaden, tks, Baltimore lb.	...	.089	.63¾	.666	.30	.60*
Refined, alkali, drs ....lb.	.127	.129	.12	.129	.084	.122
Kettle boiled, drs .....lb.	.137	.139	.13	.139	.096	.132
Light pressed, drs .....lb.	.117	.119	.11	.139	.082	.112
Tks ....lb.	.109	.11	.102	.11	.072	.10
Neatsfoot, CT, 20°, bbls, NY lb.	nom.	.25¾	...	.25¾	.18¼	.26½
Extra, bbls, NY ....lb.	nom.	.14⅞	...	.14⅞	.08¼	.14
Pure, bbls, NY ....lb.	nom.	.19¼	.17¾	.19¼	.12¼	.17¾
Oiticica, bbls (PC) ....lb.	.23	.25	.29	.25	.16½	.23½
Oleo, No. 1, bbls, NY ...lb.	...	.13¼	...	.13¼	.07⅜	.13¼
No. 2, bbls, NY ......lb.	...	.13	...	.13	.07⅜	.13
Olive, denat, bbls, NY ..gal.	3.50	4.00	3.50	4.50	2.25	4.25
Edible, bbls, NY ......gal.	4.00	4.25	4.00	5.50	4.75	5.30
Foots, bbls, NY ....lb.	.19	nom.	.19	.20	.10¼	.19
Palm, Kernel, bulk ....lb.	no prices		no prices		no prices	
Niger, cks ....lb.	...	.0825	.0925	...	.04¼	.09
Sumatra, tks ....lb.	no prices		no prices		.02	.09
Peanut, tks, f.o.b. mill ...lb.	...	.13	.12⅞	.13	.05¼	.16
Refined, bbls, NY .....lb.	.17	nom.	.16¾	.17	.08	.16
Perilla, drs, N Y (A) ..lb.	...	.246	...	.246	.18	.23
Tks, Coast ....lb.	...	.2380	...	.2380	.16½	.21½
Pine, see Pine Oil, Chem. Sec.						
Rapeseed, blown, bbls, NY lb.	.18	.18½	.18	.18½	.16½	.18
Denatured, drs, NY ..gal.	...	nom.	...	nom.	.95	1.00
Red, Distilled, drs ....lb.	.11¾	.13½	.11¾	.143	.07¼	.13
Tks ....lb.	.11	.11¾	.11	.12½	.06¼	.11½
Sardine, Pac Cst, tks (PC) lb.	.0890		.66½	nom.	.39	.62½*
Refined alkali, drs .....lb.	.127	.129	.12	.129	...	...
Light pressed, drs .....lb.	.117	.119	.11	.119	.084	.122
Tks ....lb.	.109	.11	.102	.11	.078	.112
Soy Bean, crude						
Dom, tks, f.o.b. mills ..lb.	.12¾	nom.	.12¾	nom.	.05⅝	.12¾
Crude, drs, NY ......lb.	.13	...	.13	nom.	.06¼	.12¼
Ref'd, drs, NY ....lb.	.14¾	nom.	.14¾	nom.	.05½	.12¾
Tks ....lb.	.13½	nom.	.13½	nom.	.07⅝	.13½
Sperm, 38° CT, bleached						
(FP) bbls, NY (A) lb.	.1301	...	.1301	nom.	.11	.127
45° CT, blchd, bbls, NY lb.	.1278	...	.1278	nom.	.103	.13
Stearic Acid, double pressed						
dist bgs ....lb.	.14	.15¾	.14	.16½	.09½	.13¾
Double pressed saponified						
bgs ....lb.	.15¼	.16¾	.15¼	.16¾	.09¾	.14
Triple pressed dist bgs lb.	.17	.18¾	.17	.19½	.12½	.16½
Stearine, Oleo, bbls ....lb.	...	.11	...	.11	...	.09
Tall, crude, drs, c-l, wks ton	...	55.00	40.00	55.00	...	...
tks, wks ....ton	...	40.00	30.00	40.00	...	...
dist, drs, c-l, delv .....lb.	...	.05	.04	.05	...	...
tks, wks ....lb.	...	.04½	.03½	.04½	...	...
Tallow City, extra loose ..lb.	...	.097¼	...	.097¼	...	.07½
Edible, tierces ....lb.	no prices		no prices		...	.05½
Acidless, tks, NY ......lb.	.13	nom.	.13	nom.	.07½	.11½
Turkey Red, single, drs ..lb.	...	.08¾	...	.08¾	.06½	.08¾
Double bbls ....lb.	...	.12	...	.12	.09½	.11
Whale:						
Winter bleach, bbls, NY lb.	...	.1110	...	.1110	.099	.1110
Refined, nat, bbls NY ..lb.	...	.1070	...	.1070	.095	.1070

(FP) Full Priority. (PC) Price Ceiling. (A) Allocation
* Previous prices were on gallon basis.

PROFESSIONAL DIRECTORY

Canadian Review

(Continued from page 765)

In mid-October it was announced officially by Hon. C. D. Howe that 10 new plants were being added to Canada's wartime explosives and chemicals program. Six of these plants are "major" undertakings.

Three of the large projects are to produce alkylate for high-octane aviation gasoline. The first one will be in operation by mid-November. The others next year.

Three Others

Three other major projects will manufacture special chemicals. Two of these plants are scheduled to start production within the next four months. All plants will be administered by the Chemicals and Explosives Branch of the Department of Munitions and Supply through Allied War Supplies Corporation.

On completion of this new program the number of explosives, chemical and ammunition-filling plants in Canada will stand at 38. Now operating are 28 projects, 15 of which are classed as major undertakings involving heavy expenditures and large numbers of employees. Three are producing explosives, three are big shell-filling plants, one is a large fuse-filling plant which has just gone into production. The others are chemical producers of various kinds.

Of the 13 smaller projects, eight are making chemicals, one manufactures fuse powders and four are turning out or filling smoke bombs.

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Index to Advertisers

Index to Advertisers

"WE"-EDITORIALLY SPEAKING

"Any company which does not adopt a policy of research in its business may as well set the date of its liquidation. I believe that in research is the answer to a competition that is increasing every day. We find that it is our best weapon for defense and offense." Charles Belknap before the Advertising Club of Boston just 15 years ago. And in the same issue of Chemical Industries we find Frank R. Henderson, president of the Rubber Exchange of New York, stating:—"Under the most favorable conditions it would be years before synthetic rubber could become a serious competitor of the rubber we now use." We believe there is a moral for all of us in these two news items.

Any optimistic feeling on the part of the electorate that the November election results will bring to the New Deal a sobering effect and less cheap petty politics must be considerably deflated by the remarks of Vice-President Wallace to the effect that the well-to-do with plenty of leisure time (mostly Republicans of course!) were largely responsible for the reversal. The same old alibis, the same old appeal to class hatred. Even a war doesn't make them desist from smear tactics. Well, for the benefit of the gentleman generally conceded to be the Crown Prince of the New Deal we happen to know one rather well-to-do but very leftish New Dealer who was not at the polling place on November 3, but instead was abroad wasting precious fuel while fellow-countrymen were trying to find out how to get along with one-quarter to one-third cut in fuel oil.

For every civilian employee in federal service a year ago Citizen Doakes now must support two. The federal civilian payroll alone is enough *each month* to equip every member of our 4½ million-man Army with a modern Garand semi-automatic rifle. Strangely enough, federal employment has increased since Pearl Harbor in such distinctly non-war agencies as National Archives, Smithsonian Institution and the Tariff Commission.

This man William M. Jeffers is certainly showing a lot of people in Washington how to cut red tape. And does he talk back to the politicians when it is necessary! He settled the cotton vs. rayon for tires squabble in about fifteen minutes' time.

"But during a war," the rubber czar told his Senate critics, "I am assuming that America can trust Americans. I am assuming that all these men are doing the best they can for the country and forgetting personal interests.

"And I'm not going to take any chance with the Army. If they say rayon is better, they'll get rayon; and if cotton can be made as good as rayon, cotton will have a place in the picture. The Army is going to get what it wants regardless of whether it is rayon or cotton.

"I'm not going to put myself in a position where it can be said that I didn't have the intelligence or guts to do this job. The trouble with this whole situation is that it has been tackled by a muddler of men who were afraid that some Congressional committee pressure group wouldn't like their decisions. I will make my own decisions and I'll stand by them."

We see by the papers that Albert W. Hawkes, the industrialist who beat out Mayor Hague's candidate Smathers in the New Jersey senatorial race, has resigned his $100,000-a-year job as president of Congoleum-Nairn, Inc., to work as a U. S. Senator at $10,000 annually.

The Senator-elect in making this announcement said.

"My important job as the representative of others is to be on the job. It is my intention to attend all meetings of Senate committees to which I am assigned, as far as is humanly possible to do so. I also expect to be in my seat in the Senate chamber at all times when the interest of my constituents requires my presence there.

"I consider the Senate committee meetings and attendance in the Senate as 'first things which should come first' with the representative of the people."

We hope more Senators and Congressmen will subscribe to these sentiments.

The war isn't as tough as it was on the home front. The WPB last month abolished more than 120 forms formerly used and in addition, simplified 130 more. Now the government forms are only *almost* impossible to fill out.

We see that the WPB has released Schedule VI to Limitation Order L-20 which is designed to standardize toilet tissue manufacture. There's a destiny that shapes our ends—rough-hew them as we will!

Smaller businesses are at last getting the attention they've been clamoring for in Washington. Lou Holland's Smaller War Plants Corp. has succeeded in accomplishing what previous WPB groups failed to do—prevail on the military services to pass out contracts to the small factory owners. Looks like the war is going to have many good effects on this country—even the little man can have a busy day!

Priorities
Allocations
Price Controls

See the Statistical and Technical Data Section (Part 2 of this issue) for monthly digest of Government Regulations of Materials and Prices. Invaluable to you in your work.

Fifteen Years Ago

(From our files of fifteen years ago)

Elon H. Hooker addresses National Association of Manufacturers at annual meeting held at Chattanooga.

Solvay process undertakes production of liquid chlorine.

Mathieson Alkali buys the B. P. Clapp Ammonia Co., Cincinnati.

John F. Queeney is elected to the board of directors of the Mississippi Valley Association.

Fred L. Lavanburg, pioneer in the dry color field, dies in his 63rd year.

Davison Chemical acquires Peck Fertilizer of New Orleans.

State of Chemical Trade

Current Statistics (October 31, 1942)—p.115

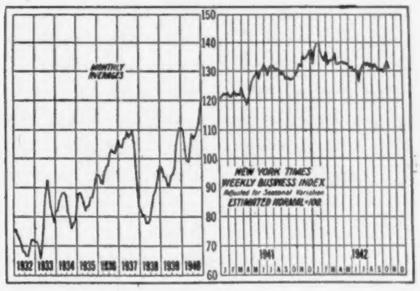
WEEKLY STATISTICS OF BUSINESS

Week Ending	Carloadings 1942	Carloadings 1941	% of Change	Electrical Output* 1942	Electrical Output* 1941	% of Change	Jour. of Com. Price Index	Nat'l Fertilizer Ass'n Price Indices: Chem. & Drugs	Fats & Oils	Fert. Mat.	Mixed Fert.	All Groups	†Labor Dept. Chem. & Drug Price Index	% Steel Activity	N. Y. Times Index Bus. Act.	Fisher Commodity Index
Oct. 10	909,957	903,877	+ 0.7	3,702,299	3,355,440	+10.3	104.3	120.7	142.7	118.0	115.3	130.1	96.2	98.6	130.5	108.2
Oct. 17	900,767	922,884	— 2.4	3,717,360	3,313,596	+12.2	104.2	120.7	145.9	117.3	115.3	129.6	96.1	100.2	129.8	108.2
Oct. 24	903,246	913,605	— 1.1	3,752,571	3,340,768	+12.3	104.2	120.7	145.9	117.3	115.3	130.0	96.1	101.0	131.7	108.4
Oct. 31	890,469	894,745	— 0.5	3,774,891	3,380,488	+11.7	104.2	120.7	146.2	117.4	115.3	130.0	96.1	101.1	133.1	108.4

MONTHLY STATISTICS

CHEMICAL:	August 1942	August 1941	July 1942	July 1941	June 1942	June 1941
Acid, sulfuric (expressed as 50° Baumé, short tons, Bureau of the Census)						
Total prod. by fert. mfrs.	......	......	No Longer Available		......	......
Consumpt. in mfr. fert.	......	......	......	......	......	......
Stocks end of month	......	......	......	......	......	......
Alcohol, Industrial (Bureau Internal Revenue)						
Ethyl alcohol prod., proof gal..	......	......	No Longer Available		......	......
Comp. denat. prod., wine gal...	......	......	......	......	......	......
Removed, wine gal.	......	......	......	......	......	......
Stocks end of mo., wine gal...	......	......	......	......	......	......
Spec. denat. prod., wine gal. ..	......	......	......	......	......	......
Removed, wine gal.	......	......	......	......	......	......
Stocks end of mo., wine gal...	......	......	......	......	......	......
Ammonia sulfate prod., tons *a*..	......	......	......	......	63,887.9	61,374.3
Benzol prod., gal. *b*	......	......	No Longer Available		......	......
Byproducts coke, prod., tons *a*..	......	......	5,312,197	5,019,600	5,117,784	4,841,700
Cellulose Plastic Products (Bureau of the Census)						
Nitrocellulose sheets, prod., lbs.	......	......	......	......	946,198	913,725
Sheets, ship., lbs.	......	......	......	......	900,336	988,185
Rods, prod., lbs.	......	......	......	......	364,652	332,433
Rods, ship., lbs.	......	......	......	......	342,653	363,191
Tubes, prod., lbs.	......	......	......	......	63,626	140,482
Tubes, ship., lbs.	......	......	......	......	121,162	124,067
Cellulose acetate, sheets, rods, tubes						
Production, lbs.	......	......	......	......	556,579	512,506
Shipments, lbs.	......	......	......	......	523,011	523,438
Molding comp., ship.; lbs. ..	......	......	......	......	3,048,026	2,264,470
Methanol (Bureau of the Census)						
Production, crude, gals.	......	......	No Longer Available		......	......
Production, synthetic, gals. ...	......	......	......	......	......	......
Pyroxylin-Coated Textiles (Bureau of the Census)						
Light goods, ship., linear yds...	3,104,980	3,414,838	......	4,297,069	3,178,812	4,313,872
Heavy goods, ship., linear yds..	1,580,665	3,809,534	......	3,132,999	2,829,929	3,164,815
Pyroxylin spreads, lbs. *c* ..	4,202,140	4,771,353	......	6,886,395	4,660,719	7,464,431
Exports (Bureau of Foreign & Dom. Commerce)						
Chemicals and related prod. *d*..	Exports and Imports No Longer Available					
Crude sulfur *d*	......	......	......	......	......	......
Coal-tar chemicals *d*	......	......	......	......	......	......
Industrial chemicals *d*	......	......	......	......	......	......
Imports						
Chemicals and related prod. *d*..	......	......	......	......	......	......
Coal-tar chemicals *d*	......	......	......	......	......	......
Industrial chemicals *d*	......	......	......	......	......	......
Employment (U. S. Dept. of Labor, 3 year av., 1923-25=100) Adjusted to 1937 Census Totals						
Chemicals and allied prod., including petroleum	......	......	156.7	140.0	156.7	171.1
Other than petroleum	......	......	......	......	......	......
Chemicals	......	......	195.2	175.9	195.8	172.1
Explosives	......	......	No Longer Available		......	......
Payrolls (U. S. Dept. of Labor, 3 year av., 1923-25=100) Adjusted to 1937 Census Totals						
Chemicals and allied prod., including petroleum	......	......	......	......	......	......
Other than petroleum	......	......	......	......	......	......
Chemicals	......	......	......	......	......	......
Explosives	......	......	No Longer Available		......	......
Price index chemicals*	96.3	96.5	96.5	87.3	96.5	87.2
Drugs & Pharmaceuticals* ...	129.0	129.1	129.1	100.0	129.1	99.9
Fert. mat.*	78.3	78.4	82.8	74.0	82.8	69.9
Paint and paint mat.	100.1	100.3	100.7	91.6	100.3	90.3
FERTILIZER:						
Exports (long tons, Nat. Fert. Association)						
Fertilizer and fert. materials ..	Exports and Imports No Longer Available					
Total phosphate rock	......	......	......	......	......	......
Total potash fertilizers	......	......	......	......	......	......
Imports (long tons, Nat. Fert. Association)						
Fertilizer and fert. materials ..	......	......	......	......	......	......
Sodium nitrate	......	......	......	......	......	......
Total potash fertilizer	......	......	......	......	......	......

INDUSTRIAL TRENDS



Business: Increasing output from new and enlarged war plants continues to expand the volume of production. According to the Federal Reserve Board's Index of Industrial Activity output increased more than seasonally in September when the Index rose two points to 185 per cent of the 1935-1939 average. Armament, steel and manufactured foods were among the components to show increases.

The *New York Times* weekly business index fluctuated during October with a net increase of seven-tenths of a point from 130.5 for week ending October 10 to 131.2 for week ending October 31.

Steel: According to the American Iron and Steel Institute all previous records for total steel production were broken in October as the steel industry exceeded its rated capacity to produce 7,584,864 tons of steel. This was seven per cent higher than the September total and almost 349,000 tons more than the output in October, 1941.

In spite of sustained high production the industry is still unable to reduce backlogs or keep up with demand for steel products.

During September iron ore movement maintained a high rate, a total of 11,847,919 gross tons being shipped. This is an increase of 14.9 per cent over September, 1941. For the season to October 1 the total movement has been 72,441,453 tons, a gain of 10,417,225 tons, 16.8 per cent over season to October 1, 1941.

Carloadings: The number of carloadings during the four weeks of October were below those for the same period in 1941 by about 0.82 per cent. However because of heavier loading and more efficient handling the actual ton-miles of material carried is considerably ahead of last year.

The problem of equipment for the rail-

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roads is becoming serious. With 1943 freight traffic forecast at 15% above this year's level, the railroads say they'll need at least 900 new locomotives, 80,000 freight cars and 2,100,000 of rails. There is practically no chance, however that materials will be allocated to meet all these requests. Due to a shortage of steel shapes and bars, railroad equipment and car building shops are operating at only about 15 per cent of capacity.

Transportation people are worried about this situation where equipment is being pushed to the limit without provision for replacements and repairs in the face of an even bigger year to come. They can't do much about it unless they are given higher priority.

Construction: According to F. W. Dodge Corporation total value of construction contracts awarded during September in the 37 eastern states was $723,216,000. This was $2,188,000 above the previous month and $99,924,000, or 16% ahead of September, 1941. Total valuation of contracts for the first three-quarters of 1942 is 35 per cent higher than for same period last year.

Contracts for non-residential building during the nine months' period amounted to $2,989,130,000, of which $1,809,834,000, or 60% was in the industrial building classification. The valuation of industrial building contracts to date this year considerably exceeds the 1941 nine-month valuation of $1,682,166,000 for all types of non-residential building combined.

Electric Output: According to the Federal Power Commission the average daily production of electric energy for public use in September reached a record high of 568,675,000 kilowat-hours, or 1.5 per cent over the figure for August.

The month's production was 15,922,893,000 kilowatt-hours, an increase of 12.6 per cent. over total production in September, 1941. Of the total output, 5,191,697,000 or 32.6 per cent was produced by waterpower.

Retail Trade: According to the Federal Research Board, department store sales, which had been unusually large in August, showed somewhat less than the usual sharp seasonal rise during September. In the first half of October sales were sustained near the high level prevailing at the beginning of the month. Variety store sales increased seasonally from August to September, while sales in small towns and rural areas rose by more than the usual seasonal amount.

Commodity Prices: The Federal Reserve Board announced that prices of uncontrolled commodities advanced further in September. During first half of October, after passage of an amendment to the Price Control Act of 1942 more widespread controls were announced.

MONTHLY STATISTICS (cont'd)

FERTILIZER, (Cont'd)	August 1942	August 1941	July 1942	July 1941	June 1942	June 1941
Superphosphate e (Nat. Fert. Association)						
Production, total	413,396	324,626	391,146	317,712	390,081	307,907
Shipments, total	378,196	223,978	196,424	173,000	266,238	272,209
Northern area	249,914	127,262	112,036	95,247	139,076	156,903
Southern area	128,282	96,716	84,388	77,753	127,160	115,306
Stocks, end of month, total	......	......	1,194,810	1,137,459	......	......
Tag Sales (short tons, Nat. Fert. Association)						
Total, 17 states	212,238	180,437	......	......	159,520	143,548
Total, 12 southern	66,054	71,662	......	......	147,729	103,774
Total, 5 midwest	146,184	108,775	......	......	11,791	39,774
Fertilizer employment *i*	......	......	......	......	......	......
Fertilizer payrolls *i*	......	......	......	......	......	......
GENERAL:						
Acceptances outst'd'g *f*	......	......	......	......	......	......
Coal prod., anthracite, tons	......	......	......	......	......	......
Coal prod., bituminous, tons	......	......	......	......	......	......
Com. paper outst'd'g *f*	......	......	......	......	......	......
Failures, Dun & Bradstreet	......	......	......	......	......	......
Factory payrolls *i*	......	......	......	......	......	......
Factory employment *i*	......	......	......	......	......	......
GENERAL MANUFACTURING:						
Automotive production	......	......	No Longer	Available	......	......
Boot and shoe prod., pairs	38,586,091	45,464,736	44,353,063	39,779,598	39,779,598	40,462,810
Bldg. contracts, Dodge *i*	......	......	......	......	......	......
Newsprint prod., U. S. tons	......	......	76,952	83,199	79,386	83,962
Newsprint prod., Canada, tons.	......	......	241,178	293,483	242,762	273,697
Glass containers ,gross‡	......	......	......	......	6,722,950	6,166
Plate glass prod., sq. ft.	......	......	......	......	4,726,000	18,533,000
Window glass prod., boxes	......	......	......	......	1,223,000	1,304,000
Steel ingote prod., tons	......	......	......	......	......	......
% steel capacity	......	......	......	......	......	......
Pig iron prod., tons	......	......	No Longer	Available	......	......
U.S. cons'pt. crude rub., lg. tons	......	......	No Longer	Available	......	......
Tire shipments	......	......	No Longer	Available	......	......
Tire production	......	......	No Longer	Available	......	......
Tire inventories	......	......	No Longer	Available	......	......
Cotton consumpt., bales	925,089	872,035	955,041	928,943	966,940	875,812
Cotton spindles oper.	22,973,572	23,029,066	23,109,576	23,027,818	23,090,560	22,994,980
Wool consumption *s*	49.9	53.5	56.5	53.3	50.9	55.7
Rayon deliv., lbs.	38,100,000	37,300,000	......	39,400,000	38,900,000	38,300,000
Rayon employment *i*	......	......	......	......	......	......
Rayon payrolls *i*	......	......	......	......	......	......
Soap employment *i*	......	......	......	......	......	......
Soap payrolls *i*	......	......	......	......	......	......
Paper and pulp employment *i*	......	......	......	......	......	......
Paper and pulp payrolls *i*	......	......	......	......	......	......
Leather employment *i*	......	......	......	......	......	......
Leather payrolls *i*	......	......	......	......	......	......
Glass employment *i*	......	......	......	......	......	......
Glass payrolls *i*	......	......	......	......	......	......
Rubber prod. employment *i*	......	......	......	......	......	......
Rubber prod. payrolls *i*	......	......	......	......	......	......
Dyeing and fin. employment *i*	......	......	......	......	......	......
Dyeing and fin. payrolls *i*	......	......	......	......	......	......
MISCELLANEOUS:						
Gasoline prod., *p*	......	......	......	......	......	......
Cottonseed oil consumpt., bbls.	......	......	239,933	320,947	194,105	318,152
PAINT, VARNISH, LACQUER, FILLERS:						
Sales 680 establishments, dollars	$41,105,740	$48,646,514	$42,220,566	$48,980,308	$43,981,828	$54,336,429
Trade sales (580 estabts.) dollars	$20,187,334	$23,893,291	$20,813,396	$24,274,619	$22,430,391	$28,049,452
Industrial sales, total, dollars..	$16,748,036	$20,246,764	$17,173,192	$20,132,508	$17,080,263	$21,022,220
Paint & Varnish, employ. *i*	......	......	......	......	......	......
Paint & Varnish, payrolls *i*	......	......	......	......	......	......

a Bureau of Mines; *b* Crude and refined plus motor benzol, Bureau of Mines; *c* Based on 1 lb. of gun cotton to 7 lbs. of solvent, making an 8-lb. jelly; *d* 000 omitted, Bureau of Foreign & Domestic Commerce; *e* Expressed in equivalent tons of 16% A.P.A.; *f* 000,000 omitted at end of month; *i* U. S. Dept. of Labor, 3 year average, 1923-25 = 100, adjusted to 1937 Census totals; *j* 000 omitted, 37 states; *p* Thousands of barrels, 42 gallons each; *q* 680 establishments, Bureau of the Census; *r* Classified sales, 580 establishments, Bureau of the Census; *s* 53 manufacturers, Bureau of the Census, in millions of lbs.; *t* 387 identical manufacturers, Bureau of the Census, quantity expressed in dozen pairs; *v* In thousands of bbls., Bureau of the Census; ** Indices, Survey of Current Business, U. S. Dept. of Commerce; *z* Units are millions of lbs.; ‡ 000 omitted; * New series beginning March, 1940.

Chemical Finances

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Monsanto Nets $2.65

Monsanto Chemical Co. and American subsidiaries report for nine months ended September 30, 1942, net profit of $3,978,435 after depreciation, interest and federal income and excess profits taxes (after deduction of $710,268 representing 10% of excess profits which is returnable after the war) but before minority interest, equal, after dividend requirements on the preferred stocks, to $2.65 a share on 1,241,694 shares of common stock, exclusive of 21,263 shares of treasury stock.

This compares with net profit in first nine months of 1941, of $4,974,189, or $3.57 a share on common stock.

Net sales for nine months ended September 30, last, were $50,269,773, against $46,733,301, an increase of 7½%.

Hercules Net Down

Hercules Powder Co. and subsidiaries in a report for the nine months ended September 30, 1942, show a net profit of $3,143,457 after charges, provision of $17,402,567 for federal income and excess profits taxes and $550,000 reserve for contingencies. The above net is equal, after preferred dividend requirements, to $2.09 a share on 1,316,710 shares of common stock.

This compares with a net profit for the nine months ended September 30, 1941, after provision of $9,112,441 for federal taxes, of $4,356,632, equal to $3.01 a share on common.

For the quarter ended September 30, last, net profit was $948,327 equal to 62 cents a share on common, comparing with $1,525,442 or $1.06 a common share for the September quarter of previous year, and $993,320 or 66 cents a common share for the quarter ended June 30, 1942.

Net sales for the first nine months of 1942 totaled $85,290,589 as compared with $58,940,341 for the corresponding 1941 period.

Earnings Statements Summarized

Company:	Net income 1942	Net income 1941	Common share earnings 1942	Common share earnings 1941
Abbott Laboratories—Nine months, Sept. 30	$1,419,763	$1,733,025	$1.76	$2.24
Air Reduction Co., Inc.—Sept. 30 quarter	2,176,013	1,897,045	.80	.70
Air Reduction Co., Inc—Nine months, Sept. 30	4,994,436	5,234,801	1.84	1.93
Amer. Agricultural Chemical Co.—Oct. 1 quarter	167,518	195,622	.26	.31
American Viscose Corp.—Sept. 30 quarter	1,516,723	2,090,464	.70	1.03
American Viscose Corp.—Nine months, Sept. 30	3,939,528	5,465,665	1.75	2.63
Atlas Powder Co.—Nine months, Sept. 30	1,111,216	1,326,097	3.35	4.24
Catalin Corp. of Amer.—Nine months, Sept. 30	117,933	164,887	.22	.31
Climax Molybdenum Co.—Sept. 30 quarter	3,143,800	2,569,627	1.25	1.02
Climax Molybdenum Co.—Nine months, Sept. 30	8,927,600	6,288,332	3.54	2.49
Columbian Carbon Co.—Nine months, Sept. 30	2,140,999	2,540,968	3.98	4.73
Commercial Solvents Corp.—Sept. 30 quarter	527,016	732,504	.20	.28
Commercial Solvents Corp.—Nine months, Sept. 30	1,670,927	1,637,486	.63	.62
Consolidated Chem. Indus., Inc.—Sept. 30 quarter	232,403	223,325	c.66	c.62
Consolidated Chem. Indus.—Nine months, Sept. 30	725,966	814,045	c2.05	c2.28
Davison Chemical Corp.—Sept. 30 quarter	282,224	157,480	.55	.30
Duval Texas Sulphur Co.—Sept. 30 quarter	96,310	....	.19	....
Duval Texas Sulphur Co.—Twelve months, Sept. 30	826,263	....	1.65	....
Freeport Sulphur Co.—Sept. 30 quarter	641,619	706,608	.80	.89
Freeport Sulphur Co.—Nine months, Sept. 30	1,926,648	2,358,013	2.41	2.96
Hercules Powder Co.—Sept. 30 quarter	.948,327	1,525,442	.62	1.06
Hercules Powder Co.—Nine months, Sept. 30	3,143,457	4,356,632	2.09	3.01
Industrial Rayon Corp.—Nine months, Sept. 30	1,506,403	1,706,251	1.98	2.25
National Gypsum Co.—Sept. 30 quarter	311,224	556,581	.18	.37
National Gypsum Co.—Nine months, Sept. 30	692,677	1,200,629	.36	.75
National Oil Products Co.—Nine months, Sept. 30	431,834	635,774	2.00	2.95
Newport Industries, Inc.—Sept. 30 quarter	83,169	z265,522	.13	....
Newport Industries, Inc.—Nine months, Sept. 30	495,794	z536,114	.80	....
Norwich Pharmacal Co.—Sept. 30 quarter	249,297	251,552	.31	.32
Norwich Pharmacal Co.—Nine months, Sept. 30	537,673	591,392	.67	.74
Parke, Davis & Co.—Nine months, Sept. 30	5,128,627	5,660,274	1.05	1.16
Parke, Davis & Co.—Twelve months, Sept. 30	7,474,815	7,797,737	1.53	1.59
Pfizer & Co., Inc.—Nine months, Sept. 30	772,323	....	1.54	....
Sharp & Dohme, Inc.—Sept. 30 quarter	534,285	571,496	.43	.48
Sharp & Dohme, Inc.—Twelve months, Sept. 30	1,846,198	1,548,658	'1.34	.96
Sherwin-Williams Co.—Year Aug. 31	5,329,256	5,611,185	7.43	7.83
Union Carbide & Carbon Corp.—Sept. 30 quarter	8,941,245	10,916,770	.96	1.18
United Chemicals, Inc.—Nine months, Sept. 30	164,681	174,697	....	....
U.S. Indust. Alcohol Co.—Six months, Sept. 30	418,128	986,072	1.11	2.62
Victor Chemical Works—Nine months, Sept. 30	701,410	897,769	.93	1.29

a On Class A shares; *b* On Class B shares; *c* On Combined Class A and Class B shares; *d* Deficit. *f* No common dividend; *j* On average number of shares; *k* For the year 1940; *b* On Preferred stock; On Class A shares; *y* Amount paid or payable in 12 months to and including the payable date of the most recent dividend announcement; ‡ Indicated quarterly earnings as shown by comparison of company's reports for the 6 and 9 months periods; § Plus extras; *n* Preliminary statement; *h* On shares outstanding at close of respective periods; ** Indicated quarterly earnings as shown by comparison of company's reports for 1st quarter of fiscal year and the six months period; ‡‡ Indicated earnings as compiled from quarterly reports; † Net loss; * Not available; ¶¶ Before interest on income notes; *x* Paid on or declared in last 12 months plus extra stock; *w* Last dividend declared, period not announced by company.

Price Trend of Representative Chemical Company Stocks

	Oct. 10	Oct. 17	Oct. 24	Oct. 31	Net gain or loss last mo.	Price on Nov. 1, 1941	1942 High	1942 Low
Air Reduction Co.	36	36	38⅛	37⅞	+ 1⅞	38	38⅜	29½
Allied Chemical & Dye Corp.	140¼	143	143	139	— 1¼	149½	149	118½
Amer. Agric. Chem.	22⅜	22¾	22½	23¼	+ ⅞	19¼	24	18¾
Amer. Cyanamid "B"	37	37⅝	37⅜	37½	+ ½	38½	41⅞	28⅝
Columbian Carbon	75	76½	76¼	76½	+ 1½	75½	77	51
Commercial Solvents	9⅞	9¾	9¾	9¾	— ⅛	9¼	10⅛	7¼
Dow Chemical Co.	120	119½	123	122	+ 2	114½	124¼	95
du Pont	127	127½	131⅝	130	+ 3	146	144	102¾
Hercules Powder	69	69	69	67	— 2	70	72	51
Mathieson Alkali Works	23⅝	23¾	23⅝	23¼	— ⅜	26⅝	29½	19½
Monsanto	78⅜	78	79⅞	77½	— ⅞	83½	91	66
Standard Oil of N. J.	43¾	43¼	43⅝	43	— ¾	43⅞	43⅞	30½
Texas Gulf Sulphur	35¾	35¾	36⅞	37½	+ 1¾	33	37½	28
Union Carbide & Carbon	73¼	73¾	74¾	74⅜	— 1⅛	69½	75¾	58
United Carbon Co.	51½	53	55⅛	54½	+ 3	44	55¼	37
U. S. Industrial Alcohol	33	32½	30¾	30⅝	— 2⅜	29¼	34¼	24½

Dividends and Dates

Name	Per Share	Stock Record	Payable
Atlas Powder Co.	$1.25	11-30	12-10
Climax Molybdenum Co. (special)	1.00	11-5	11-17
Dow Chem. Co., com. (quar.)	.75	11-2	11-16
5% pref. (quar.)	1.25	11-2	11-16
Fansteel Metallurgical, $5 pref. (quar.)	1.25	12-15	12-18
Harbison-Walker Refractories, com.	.25	11-12	12-1
6% pref. (quar.)	1.50	1-6-43	1-20-43
Harshaw Chemical, 4½% conv. pfd. (quar.)	1.125	11-16	12-1
Hooker Electrochem. Co. (quar.)	.40	11-13	11-30
Internat. Nickel Co. (Canada), payable in U. S. funds less Canad. tax	.50	12-1	12-31
Nat. Gypsum Co., $4.50 pfd. (quar.)	1.125	11-17	12-1
N.J. Zinc Co. (irreg.)	1.00	11-20	12-10
Norwich Pharmacal	.15	11-20	12-10
Sherwin-Williams Co. com. (quar.)	.75	10-31	11-16
5% pref. AAA (quar)	1.25	11-14	12-1
Texas Gulf Sulphur (quar.)	.50	12-1	12-15
Extra	.25	12-1	12-15
United Chem., Inc. $3 pfd. (quar.)	.75	11-10	12-1
U.S. Rubber Co., 8% non-cum. 1st pfd. (irregular)	4.00	12-4	12-18
Westvaco Chlorine Products	.35	11-10	12-1

Koppers Pays $4.45

Koppers Co. and wholly-owned subsidiaries report for 12 months ended September 30, 1942, subject to audit and adjustments, a net income of $5,649,280 after depreciation, depletion, interest, amortization and provision of $7,735,958 for federal income and excess profits taxes and an adjustment of $175,774 for federal income tax accruals for prior periods. The above net is equal after dividend requirements on 200,000 shares of $6 preferred stock, to $4.45 a share on 1,000,000 shares of common stock.

This compares with net income of $5,343,712 after providing $999,620 for federal taxes, equal to $4.14 a common share for the 12 months ended September 30, 1941.

Davison Earnings Up

Davison Chemical Corp. reports for the quarter ended September 30, 1942, a net profit of $282,224 after charges and provision for federal, foreign and state income taxes, equal to 55 cents a share on the 514,134 shares of capital stock.

This compares with a net profit of $157,480 or 30 cents a share for the September quarter of previous year.

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Chemical Stocks and Bonds

PRICE RANGE 1942 October Last	1942 High	1942 Low	1941 High	1941 Low	1940 High	1940 Low	Stocks	Par $	Shares Listed	Dividends 1941*	Earnings** $-per-share-$ 1941	1940	1939
NEW YORK STOCK EXCHANGE													
47¾	49⅞	37	55⅝	46	70¼	46¼	Abbott Labs.	No	755,204	1.60	2.90	2.89	2.61
37⅞	38⅜	29½	45	34⅝	55⅛	36½	Air Reduction	No	2,726,855	2.00	2.62	2.38	1.98
139	149	118½	167½	135	182	135½	Allied Chem. & Dye	No	2,401,288	6.00	9.67	9.43	9.50
23¼	23⅝	18¾	22⅞	14⅝	21	12⅛	Amer. Agric. Chem.	No	627,981	1.45	1.79	1.45	1.22
34	35	27⅜	35	26	35⅛	23	Archer-Dan.-Midland	No	545,416	1.85	5.69	5.42	3.02
58	70	43	72¼	61	80⅛	57	Atlas Powder Co.	No	254,827	4.50	6.13	5.71	3.82
114½	115	111	121	111	124⅝	112½	5% conv. cum. pfd.	100	68,597	5.00	27.77	26.01	18.94
25½	25¾	15	29⅝	18½	35⅛	20	Celanese Corp. Amer.	No	1,376,551	2.00	3.43	2.90	3.53
119	120⅜	110	122⅛	116⅝	121	105⅛	prior pfd.	100	164,818	7.00	35.08	38.69	38.67
16¼	16¼	11½	16⅛	10⅞	20	10⅛	Colgate-Palm.-Peet	No	1,962,087	0.50	3.09	1.62	2.74
76½	77	51	83	64	98⅜	71	Columbian Carbon	No	537,406	4.70	6.57	5.71	5.32
9¾	10¼	7¼	11⅞	7½	16⅝	8	Commercial Solvents	No	2,636,878	0.55	.99	.91	.61
52½	55¾	42¼	55⅝	42¼	65⅛	40¼	Corn Products	25	2,530,000	3.00	3.37	3.10	3.32
174	179	159	182½	164	184	165	7% cum. pfd.	100	245,738	7.00	41.78	7.23	7.70
17¼	21	14	21	12¼	23⅝	12⅛	Devoe & Rayn. A.	No	95,000	1.00	7.08	1.14	2.08
122	124¼	95	141⅜	111⅛	171	127¼	Dow Chemical	No	1,135,187	3.00	6.58	6.65	3.76
129½	144	102¾	164⅜	125⅛	189¼	146½	DuPont de Nemours	20	11,065,762	7.00	7.50	7.23	7.70
126	126½	120	127	120⅞	129⅝	114	4½% pfd.	No	1,688,850	4.50	53.53	51.48	52.25
137½	141	108	145½	120¼	166⅜	117	Eastman Kodak	No	2,488,242	6.00	8.57	7.96	8.55
176	176	170	183½	160	180	155	6% cum.	100	61,657	6.00	350.14	325.62	337.65
37	38¾	27	41	32⅛	39⅛	24⅜	Freeport Sulphur	10	796,380	2.00	3.95	3.81	2.76
4	5¾	3⅝	7½	4⅞	10	5⅛	Gen. Printing Ink	1	735,960	0.65	1.00	.86	.94
15⅝	16	12⅛	17⅞	11	19⅜	11	Glidden Co.	No	829,989	1.50	3.08	1.56	1.70
41	44	37¾	46	35	45	30	4½% cum. pfd.	50	199,940	2.25	15.08	8.64	9.27
89	93½	79¼	96	76	113¼	80⅞	Hazel Atlas	25	434,409	5.00	6.63	5.98	6.60
67	72	51	80¼	65¼	100⅛	60	Hercules Powder	No	1,316,710	3.00	4.23	4.01	3.65
131½	134	125	132½	123½	133⅛	126¼	6% cum. pfd.	100	96,194	6.00	69.71	66.38	60.87
28	28⅝	21	30⅞	20⅝	30	16⅝	Industrial Rayon	No	759,325	2.50	3.04	3.51	1.77
19¾	23½	18½	27	19	47⅝	21¼	Interchem.	No	290,320	1.60	6.01	2.47	4.10
108	111½	100¾	113¼	107	113	91	6% pfd.	100	65,661	6.00	32.79	16.99	24.27
9	9¼	3½	..	..	..	..	Intern. Min. & Ch.	5	473,981	...	...	...	...
54	55¼	38	..	..	..	..	4% cum. pfd.	100	100,000	...	...	...	...
29¾	30⅞	24⅛	31⅝	23	38⅞	19⅝	Intern. Nickel	No	14,584,025	2.00	2.22	2.30	2.39
43½	48¼	39	40	38¼	30⅝	26⅞	Intern. Salt	No	240,000	3.00	3.76	3.98	1.92
23	23⅜	17½	22	17¼	23⅝	14⅝	Kellogg (Spencer)	No	509,213	1.70	3.66	2.74	1.30
27⅝	31	20½	45⅝	19¼	53⅜	30	Libbey Owens Ford	No	2,513,258	3.50	3.52	3.97	3.21
15¼	15⅞	11⅜	16⅝	13	18⅝	10⅛	Liquid Carbonic	No	728,100	1.00	2.92	2.21	1.62
23¼	29½	19½	31¼	24⅛	32⅝	21	Mathieson Alkali	No	828,171	1.50	1.90	1.72	1.12
77½	91	66	94	77	119	79	Monsanto Chem.	No	1,241,816	3.00	4.90	4.32	4.01
115½	117½	110	118¾	112	119	110	4½% pfd. A.	No	50,000	4.50	38.43	57.38	54.29
119⅝	120	112	123	115	122	113½	4½% pfd. B.	No	50,000	4.50	38.43	57.38	54.29
110	110¾	102½	113½	108⅞	...	...	4 % pfd. C.	No	50,000	4.50	38.43	...	...
13½	16¼	11⅞	19¼	12¼	22⅛	14⅛	National Lead	10	3,090,664	0.50	1.10	1.34	1.23
165½	168	145	170	160½	178	160	7% cum. "A" pfd.	100	213,793	7.00	24.68	28.54	27.04
134½	146	129	154	136	159⅜	132	6% cum. "B" pfd.	100	103,277	6.00	49.90	59.46	55.30
32	35	29½	36	26	44	28⅜	National Oil Products	4	179,829	1.95	4.11	3.92	3.89
9⅞	11⅜	7¼	11⅞	6⅝	14¼	6⅛	Newport Industries	1	621,359	0.75	1.14	0.50	0.66
50¾	54	43¼	54	38⅜	64⅝	42	Owens-Illinois Glass	12.50	2,661,204	2.50	3.40	2.71	3.17
51½	52¾	42	61½	47½	71⅝	53	Procter & Gamble	No	6,409,418	2.00	4.20	4.37	3.80
118½	122	115	120	115	118½	112½	5% pfd.	100	169,517	5.00	324.38	336.78	208.55
15¾	16⅜	10⅜	16⅝	10¼	13⅛	7⅝	Shell Union Oil	No	13,070,625	1.00	1.33	1.05	0.77
28¾	30¼	19⅜	35¼	18⅞	22¼	12¾	Skelly Oil	No	981,349	1.50	6.03	3.28	1.99
26½	27½	20	34½	24⅞	30	20⅝	S. O. Indiana	25	15,272,020	1.00	3.17	2.20	2.24
43	43⅞	30½	46⅞	33	46⅛	29⅞	S. O. New Jersey	25	27,278,666	1.00	5.15	4.54	3.27
9	9⅜	7½	9⅝	6	9⅛	4⅛	Tenn. Corp.	5	853,696	1.00	1.60	1.36	0.41
38⅝	40	30	46⅝	34½	47⅝	33	Texas Corp.	25	10,876,882	2.00	4.77	2.90	3.02
37¼	37½	28	38⅞	30¼	37¼	26⅞	Texas Gulf Sulphur	No	3,840,000	2.50	2.35	2.38	2.04
74⅜	75¾	58	79⅞	60	89⅝	59⅞	Union Carbide & Carbon	No	9,277,288	3.00	4.53	4.55	3.86
54½	55¼	37	53	35	65⅝	42⅛	United Carbon	No	397,885	3.00	4.30	3.36	3.81
30⅝	34¼	24½	34¼	20	28	14	U. S. Indus. Alcohol	No	391,238	1.00	...	2.73	1.06
17¾	20⅞	14¼	34¼	15¼	48⅝	25	Vanadium Corp. Amer.	No	405,706	1.50	3.03	2.85	3.25
21¼	25½	18¾	27¼	20	31⅛	14	Victor Chem.	5	750,000	1.40	1.59	1.57	1.59
2⅜	2⅞	1	2½	⅝	4⅛	1⅝	Virginia-Caro. Chem.	No	486,122	...	−1.89	−1.36	−1.57
38¾	40¼	22½	29½	18⅞	31⅝	14	6% cum. part. pfd.	100	213,052	1.00	1.69	2.89	2.41
27	31½	22	36½	27¼	38⅜	27⅜	Westvaco Chlorine	No	553,132	1.85	2.92	2.96	2.91
107¼	108¾	100½	112	105	109⅞	106	cum. pfd.	No	58,415	4.50	22.19	21.98	...
NEW YORK STOCK EXCHANGE													
37½	41⅞	28⅝	42⅞	31	39⅞	26	Amer. Cyanamid "B"	10	2,618,387	0.60	2.42	2.44	2.07
7⅝	8	6⅞	7⅞	6⅝	8⅝	5	Duval Texas Sulphur	No	500,000	1.25	1.42	1.16	1.25
69⅞	88½	65	99	65	92	60	Heyden Chem. Corp.	100	104,983	3.00	9.04	7.86	5.98
80¾	80¾	55¼	96¼	55	104	65	Pittsburgh Plate Glass	25	2,188,040	5.00	6.82	6.30	4.94
75⅞	78¾	59¾	84	61	100	62½	Sherwin Williams	25	638,927	3.00	7.83	6.57	5.96
112⅝	115	110	115½	108½	114¾	106	5% cum. pfd.	50	122,289	5.00	47.82	39.49	35.08
PHILADELPHIA STOCK EXCHANGE													
141½	175½	125	185	162	192	158¾	Pennsylvania Salt	50	150,000	8.00	10.99	11.51	8.63

PRICE RANGE 1942 Last October	1942 High	1942 Low	1941 High	1941 Low	1940 High	1940 Low	Bonds	Date Due	Int. %	Int. Period	Outstanding $
NEW YORK STOCK EXCHANGE											
103¾	104½	101¾	104½	100⅞	105¾	100¼	Amer. I. G. Chem. Conv.	1949	5½	M-N	$22,400,000
50⅛	50⅛	34	42¼	26¼	41	27½	Anglo Chilean Nitrate inc. deb.	1967	4½	J	10,400,000
50	50	35	40	25⅝	39⅞	27	Lautaro Nitrate inc. deb.	1975	4	J-D	27,200,000
98¾	98¾	95¾	99⅞	94⅞	100¾	93⅞	Shell Union Oil	1954	2½	J-J	85,000,000
105⅜	105½	103	106⅝	102⅝	107	101⅞	Standard Oil Co. (New Jersey) deb.	1961	3	J-D	85,000,000
104⅛	105⅝	103⅜	150⅝	103	107	100⅝	Standard Oil Co. (New Jersey) deb.	1953	2¾	J-J	50,000,000
105½	106¾	104½	107⅞	102⅞	106¾	102	Texas Corp.	1959	3	A-O	40,000,000

* Including extras paid in cash.
** For either fiscal or calendar year.
x New stock.

New Trade Marks of the Month

TUFNOL
433,275

Mg-Asp
441,801

DP INC
442,896

TRIDEE
446,644

BERALLOY
450,089

Thrill
450,708

VitAnite
451,512

KEL-CO-TITE
452,556

KODAFLAT
452,712

"Cilobite"
452,819

BRINO
452,894

NUOLATE
453,117

HYDRONO
453,179

Koron
453,197

TADOL
453,449

SOLECITHIN
453,481

COLANACO
453,739

SOZOL
453,740

BOM-EX
453,768

SPEKWITE
453,854

SPEKYELLO
453,856

HYDRHOLAC
453,881

SYNTHECAST
454,222

454,304

OCTOMINS
454,471

FLIGHT-LUSTRE
454,479

FIDAMINS
454,593

ABECEDIN
454,664

SAN-LEAU
454,713

THERAFILM
454,789

Drāno
454,799

ILLUSION
454,806

BUTAPRENE
454,826

SULFATHIADOX
454,842

VORITE
454,855

OROTAN
454,857

OPTYRE
454,884

Trade Mark Descriptions †

433,275. Ellison Insulations Ltd.; Birmingham, England; June 22, '40; for materials made wholly or in part from synthetic resinoids and sold in the form of sheets, blocks, tubes, rods and shaped pieces—namely, angles and channels; since Apr. 9, '26.

441,801. Mathis Chem. Co.; Brighton, Mass.; Mar. 22, '41; for tablet of magnesia and aspirin; since Mar. 4, '41.

442,896. Distillation Products, Inc.; Rochester, N. Y.; Apr. 24, '41; for high boiling oily esters; since Mar. 16, '39.

446,644. Alba Pharmaceutical Co., Inc.; New York, N. Y.; Aug. 29, '41; for preparation of vitamin D_3 in oil for use in preparation of poultry feeds; since July 22, '41.

450,089. Cooper-Wilford Beryllium, Ltd.; Philadelphia, Pa.; Jan. 9, '42; for castings, forgings, sheets and bars of beryllium aluminum alloys; since Feb. 7, '41.

450,708. Robert G. Breckenbridge, Jr.; Denver, Colo.; Feb. 4, '42; for silver chemical preparation used as a bath for removing tarnish from silver; since Nov. 10, '41.

451,512. Boris Th. Sokoloff; Bloomfield, N. Y.; Mar 9, '42; for chocolate flavored therapeutic vitamin preparation; since Jan. 7, '42.

452,556. Briggs Bituminous Composition Co.; Philadelphia, Pa.; April 24, '42; for crude coal tar; since June 20, '39.

452,712. Eastman Kodak Co.; Jersey City, N. J. and Rochester, N. Y.; May 1, '42; for pressure sensitive adhesive cloth and adhesive cement containing pressure sensitive adhesive solids; since Dec. 17, '41 and Nov. 22, '38.

452,819. White Camel Co.; Washington, D. C.; May 5, '42; for chemical compound composed of several ingredients designed to step-up the cleansing properties of soap; since January '39.

452,894. Seydel Chemical Co.; Jersey City, N. J.; May 8, '42; for chemical preparation for use in the treatment of food to retard spoilage; since Dec. 15, '40.

453,117. Nuodex Prods. Co., Inc.; Elizabeth, N. J.; May 19, '42; for driers for ready mixed paints, enamels, varnishes, printing inks and coatings for oil cloth, linoleums and coated fabrics, such driers as are used for coating materials being also used as driers for core oils such as are used in making cores for castings; since May 7, '42.

453,179. Philip J. Fox; Chicago, Ill.; May 22, '42; for synthetic resins for moisture proofing various materials; since May 4, '42.

453,197. The B. F. Goodrich Co.; New York, N. Y., and Akron, Ohio; May 23, '42; for unplasticized vinyl resins; since Mar. 20, '42.

453,449. Table Rock Labs., Inc.; Greenville, S. C.; June 3, '42; for cod liver concentrate; since Dec. '41.

453,481. Allied Mills, Inc.; Chicago, Ill.; June 4, '42; for vegetable phosphatide preparation having reducing and emulsifying properties; since May 7, '42.

453,739. Schieffelin & Co.; New York, N. Y.; June 18, '42; for pharmaceutical preparation—namely a medicine for coughs due to colds and minor throat and bronchial irritations; since Nov. 19, '41.

453,740. Sozol (1924) Ltd.; Ilkley, England; June 18, '42; for anti-corrosive chemical compositions or compounds; since 1920.

453,768. Amorphous Chem. Co.; New York, N. Y.; June 20, '42; for chemicals for extinguishing fires; since Jan. 12, '42.

453,854. Special Chemicals Corp.; New York, N. Y.; June 24, '42; for mixture of chemicals used in the plating and finishing arts; since Sept. '33.

453,856. Special Chemicals Corp.; New York, N. Y.; June 24, '42; for mixture of chemicals used in the plating and finishing arts; since October '33.

453,881. Rohm & Haas Co.; Philadelphia, Pa.; June 24, '42; for lacquer emulsions for use in leather finishing: since June 18, '42.

454,222. Barlin Labs.; Philadelphia, Pa.; July 15, '42; for volatile preparation applied in fluid form to laminations of gauze bandage and the like in the preparing of surgical laminated bandage casts, protective bandages, surgical dressings, splints; since July 6, '42.

454,304. Meyer S. Glauser; Philadelphia, Pa.; July 18, '42; for healing and antiseptic solution and ointment; since Mar. 2, '42.

454,471. Yale Products Inc.; New York, N. Y.; July 23, '42; for medical preparation for human consumption for vitamin deficiency; since July 1, '41.

454,479. O'Cedar of Canada Ltd.; Toronto, Canada; July 24, '42; for cleaner and polish for aluminum and aluminum alloys; since Apr. 1, '42.

454,593. Animal Products Inc.; Chicago, Ill.; July 30, '42; for vitamin capsules for animals; since Nov. 13, '40.

454,664. H. R. Napp Ltd.; London, England; Aug 1, '42; for medicinal tonic preparations containing vitamins; since Feb. 15, '39.

454,713. Erlen Chemical Co.; Philadelphia, Pa.; Aug. 4, '42; for textile treating bath—namely, a water repellant size for use in the textile and hosiery trades; since Apr. 22, '42.

454,789. Wallace & Tiernan Products Inc.; Belleville, N. J.; Aug. 7, '42; for germicidal compositions; since July 23, '42.

454,799. The Drackett Co.; Cincinnati, Ohio; Aug. 8, '42; for chemical for cleansing drains, sinks, washbowls, etc.; since Apr. 3, '23.

454,806. Lace-Net Importing Co., Inc.; New York, N. Y.; Aug. 8, '42; for compound used in the finishing of textile fabrics and also for use as a type of finish for textile fabrics and for the processing of fabrics before finishing; since 1910.

454,826. The Firestone Tire & Rubber Co.; Akron, Ohio; Aug. 10, '42; for composition of synthetic rubber or rubber-like materials, with or without natural rubber; since May 27, '42.

454,842. William R. Warner & Co., Inc.; Wilmington, Del., and New York, N. Y.; Aug. 10, '42; for ointment containing a modified form of sulfathiazole, to be used in the treatment of burns and other superficial injuries; since Aug. 1, '42.

454,855. The Pierce Oil Products Corp.; East Rochester, N. Y.; Aug. 11, '42; for processed vegetable oil product for use as a rubber substitute, rubber extender, rubber plasticizer, a synthetic rubber substitute, rubber extender and rubber plasticizer and also

† Trademarks reproduced and described include those appearing in the *Official Gazette of the U. S. Patent Office.*

New Trade Marks of the Month

New Trade Marks of the Month

ALMAG 454,899

Bronoco 454,905

PICCOCIZER 454,915

PICTAR 454,916

HEXATIL 454,966

ARIDERMA 454,968

TRAKEHUL 454,971

PUREZZIN 454,999

HYCODAN 455,017

OCCO 455,027

NUTRITOSE *Pablets* 455,050

ETHYL BRAND OF ANTIKNOCK COMPOUND — ETHYL CORPORATION 455,097

STIPOLAC 455,114

TANNAFAX 455,115

MYOSAN 455,147

NURSEPTIC 455,148

NIGENOL 455,157

AVICAPS 455,185

CANICHROME 455,238

Out-Sect 455,246

Cano-Cal 455,270

SOILSORB 455,299

ARSECLOR 455,315

CUTOLE 455,357

akronize 455,360

MAXOPAQUE 455,378

MAGNAGLO 455,396

BAOTRAZINE 455,463

BACTRASULFAMIDE 455,464

BEALMAC 455,476

MACREDIN 455,478

OCTAVEE 455,479

VITA-ERG 455,506

WARCOCIDE 455,524

VICTORY 455,568

SEC-A-SIL 455,612

Trade Mark Descriptions (*Cont'd.*)

having incidental properties for use in paints, varnishes, enamels and resins; since July 27, 1904.

454,857. Rohm & Haas Co.; Philadelphia, Pa.; Aug. 11, '42; for chemical compounds used in the dyeing and bleaching of leather and in the tanning of hides; also as a dispersing agent for pigments and for precipitating glue in paper manufacture; and also used in the textile and printing industries for the precipitation of color lakes with basic dyes; since July 22, '42.

454,884. The Chemdrug Corp.; New York, N. Y.; Aug. 13, '42; for liquid preparation for treatment of diseases and affections of the eyes; since Aug. 6, '42.

454,899. The Texas Co.; New York, N. Y.; Aug. 13, '42; for cutting oils; since June 25, '42.

454,905. The R. J. Brown Co.; St. Louis, Mo.; Aug. 14, '42; for naphthas, lubricating oils and greases; since Apr. 1, '35.

454,915. Pennsylvania Industrial Chemical Corp.; Clairton, Pa.; Aug. 14, '42; for liquid cyclic hydrocarbon plasticizers for rubber and synthetic rubbers; since May 15, '42.

454,916. Pennsylvania Industrial Chemical Corp.; Clairton, Pa.; Aug. 14, '42; for liquid cyclic hydrocarbon plasticizers for rubber and synthetic rubbers; since May 14, '42.

454,966. Endo Products, Inc.; New York, N. Y.; Aug. 18, '42; for sulfur ointment skin preparations; Mar. 14, '42.

454,968. Lightfoot Schultz Co.; New York, N. Y., and Hoboken, N. J.; Aug. 18, '42; for saponaceous compounds for cleaning the hands, shaving cream, shaving sticks, shaving powder, outfit packages containing soap and towel; soap powder for bathing, washing, and cleaning purposes; laundry soaps, soap flakes, hand soaps, toilet soaps, soap pastes, washing tablets, and shampoo soaps; since May 19, '39.

454,971. C. J. Lukehart; Trafford, Pa.; Aug. 18, '42; for scalp rub; since Apr. 2, '42.

454,999. Derris Inc.; New York, N. Y.; Aug. 20, '42; for resins extracted from insecticidal roots, such as rotenone-bearing roots; since Aug. 14, '42.

455,017. Endo Products, Inc.; New York, N. Y.; Aug. 21, '42; for a narcotic preparation used as an analgesic and anti-tussive; since Aug. 1, '42.

455,027. Onyx Chem. Corp.; Jersey City, N. J.; Aug. 21, '42; for chemical compounds and preparations used in cleaning and polishing metals, used as detergents in the processing and manufacturing of textile fabrics and materials, leather goods and other related products, and also used as general detergents; since Nov. '39.

455,050. Freeda Agar Products; New York, N. Y.; Aug. 22, '42; for vitamin capsules or tablets; since June 5, '42.

455,097. Ethyl Corp.; New York, N. Y.; Aug. 25, '42; for antiknock compound; since July 29, '42.

455,114. Burroughs Wellcome & Co.; New York, N. Y.; Aug. 27, '42; for dye especially designed for use in X-ray examination of the gallbladder; since Feb. 1, '35.

455,115. Burroughs Wellcome & Co., Inc.; New York, N. Y.; Aug. 26, '42; for product presenting 5% tannic acid and 0.5% phenol in a water-soluble jelly-like base, used for the treatment of burns and scalds; since June 1, '34.

455,147. Vick Chemical Co.; Wilmington, Del.; Aug. 27, '42; for skin antiseptic; since Aug. 10, '42.

455,148. Vick Chemical Co.; Wilmington, Del.; Aug. 27, '42; for germicide; since Aug. 10, '42.

455,157. Endo Products Inc.; New York, N. Y.; Aug. 28, '42; for pharmaceutical preparation containing para-amino-benzoic acid for use as a vitamin; since Aug. 1, '42.

455,185. Nion Corp.; Los Angeles, Calif.; Aug. 29, '42; for vitamin product containing 25,000 units of vitamin A encapsulated in gelatin; since Jan. 23, '42.

455,238. Nion Corp.; Los Angeles, Calif.; Sept. 1, '42; for vitamin capsules prepared from calcium panthothenate, thiamine chloride, riboflavin, niacin, yeast concentrate and kelp; since Aug. 24, '42.

455,246. Stanco, Inc.; Wilmington, Del., and New York, N. Y.; Sept. 1, '42; for insecticides; since Aug. 5, '42.

455,270. Locke & Co.; Los Angeles, Calif.; Sept. 2, '42; for calcium preparation used in the treatment of calcium deficiency in animal husbandry; since July 11, '42.

455,299. The Cowles Detergent Co.; Cleveland, Ohio; Sept. 3, '42; for cleaning compound for use in water with or without soap; since June 19, '42.

455,315. E. R. Squibb & Sons; New York, N. Y.; Sept. 3, '42; for anti-venereal preparations, particularly an anti-venereal product whose generic name is phenarsine hydrochloride or 3-amino-4-hydroxyphenyldichloroarsine hydrochloride; since Aug. 20, '42.

455,357. West Disinfecting Co.; Long Island City, N. Y.; Sept 4, '42; for disinfectant for use as an aid in prevention of dermatitis; since March '29.

455,360. Aladdin Labs., Inc.; Minneapolis, Minn.; Sept. 5, '42; for liquid preparation to apply to rubber tires and other rubber products to prevent oxidation; since Aug. 11, '42.

455,378. The McGean Chem. Co.; Cleveland, Ohio; Sept. 4, '42; for vitreous enamel opacifiers; since Jan 3, '42.

455,396. Magnaflux Corp.; Chicago, Ill.; Sept. 7, '42; for paramagnetic composition in paste form, and containing fluorescent chemicals for use in the magnetic testing of metal articles; since June 3, '42.

455,463. Wallace Labs.; New Brunswick, N. J.; Sept. 1, '42; for pharmaceutical ointment with antiseptic properties; since July 23, '42.

455,464. Wallace Labs.; New Brunswick, N. J.; Sept. 10, '42; for pharmaceutical ointment with antiseptic properties; since July 23, '42.

455,476. The Fur Processing Corp.; Danbury, Conn.; Sept. 11, '42; for fur-carroting solutions; since May 27, '42.

455,478. The G. F. Harvey Co.; Saratoga Springs, N. Y.; Sept. 11, '42; for iodine medicinal preparation for intermuscular use; since July 20, '42.

455,479. The G. F. Harvey Co.; Saratoga Springs, N. Y.; Sept 11, '42; for vitamin medicinal preparation; since Oct. 9, '41.

455,506. Vitamin-Erg Co., Inc.; New York, N. Y., Sept. 12, '42; for vitamin preparations containing vitamins A, D, B_1 (thiamin), B_2 (riboflavin), and C (ascorbic acid), since Apr. 24, '42.

455,524. Warwick Chem. Co.; West Warwick, R. I.; Sept. 14, '42; for finishing compound for textiles; since Aug. 21, '42.

455,568. Sam Moore & Co.; Cleveland, Ohio; Sept. 16, '42; for water proof cement for securing floor coverings to supporting surfaces; since June 2, '42.

455,612. The Permutit Co.; New York, N. Y.; Sept. 18, '42; for silica gel; since Aug. 31, '42.

Summary of War Regulations

There are no more important subjects to the chemical industry today than priorities, allocations, import and price controls. Chemical Industries, last month, chronologically digested the important regulations up to September 30, 1942. This month new regulations are brought up to October 31, 1942. Next month and each month thereafter additional and revised regulations will be given.

By way of explanation a "P" order identifies a limited blanket rating given to a company, or an industry to facilitate the acquisition of scarce materials needed by such companies for defense or essential civilian production.

Distribution of commodities under industry-wide control generally is governed by "M" (material) orders, regulating distribution and flow of a given material into defense or essential civilian production channels.

Limits on the production of materials are covered by "L" limitation orders.

Acetic Anhydride

October 21, 1942. Because demand for acetic anhydride exceeds current production, the chemical has been placed under a system of allocations, by the Director General for Operations.

General Preference Order M-243, effective October 30 prohibits delivery or use of the chemical except as directed by WPB. The standard chemical allocations forms, PD-600 and PD-601, will be used by persons seeking authorization to make and accept deliveries.

Acetic anhydride is used principally in the manufacture of cellulose acetate (which, in turn, goes into plastics and parachute cloth), pharmaceuticals, vitamins, and explosives. Deliveries and use of 54 gallons or less in any one month to any one person are exempted from the restrictions of the order.

Arsenic

October 21, 1942. A revision of General Preference Order M-152 prohibits the use of arsenic except as authorized by the Director General for Operations and requires all those holding 650 pounds or more to report their inventories to WPB.

The original order made deliveries of arsenic subject to WPB approval, but did not control end-use. The revised order, in addition to controlling end-use on future allocations, will control the use of existing inventories.

Deliveries and use of 650 pounds or less in any calendar quarter for the manufacture of medicinal chemicals or preparations, or in research, testing, analytical or educational laboratories, are exempted from the restrictions of the order. Use by any person, for medicinal purposes, of any medicinal preparation containing arsenic also is expressly permitted.

The Army, Navy, Maritime Commission, and War Shipping Administration are not required to obtain authorization for use of arsenic in their possession on the effective date of the revised order, nor are these agencies required to file inventory reports.

Bone Black

October 23, 1942. Several commodities which recently have been brought under the control of the General Imports Order (M-63) have been removed from the Shipping Space Certificate System, it has been announced by Dr. W. Y. Elliott, Director of the Division of Stockpiling and Transportation.

The certificate system was set up to identify shipments and cargoes not subject to the terms of M-63. Removal of certification requirements for the commodities will eliminate considerable paper work for both importers and Government departments.

The commodities are: bone black and bone char; cashmere, alpaca, angora, llama and vicuna hair; cattle tail hair; tuna fish; Dallas Grass Seed; hemp; kapok; leather; mahogany logs and lumber.

Carbon Tetrachloride

October 10, 1942. The Director General for Operations has restored the provision of Order M-41 which permits users of carbon tetrachloride for purposes assigned a B-2 rating to consume 100 per cent of the amount used in the base period.

The 100 per cent provision was in effect from August 1 to September 30 and then lapsed. It now is restored until December 31.

A rating of B-2 is assigned users for these purposes: degreasing machines other than those used for Army and Navy contracts; packaged spotting and cleaning preparations; dry cleaning establishments, and for manual cleaning of other than metal parts of electrical equipment.

Such users now may consume 100 per cent of their average monthly consumption for the year ending September 30, 1941.

Cashew Nuts

October 10, 1942. Imports of cashew nuts having been made subject to the terms of the general imports order, M-63, the Director General for Operations has revoked Order M-147, which formerly governed these imports. Cashew nuts are the source of cashew nut oil, an important war material.

Chemical Cotton Pulp

October 21, 1942. Military exemption from the restrictions on deliveries of chemical cotton pulp has been eliminated by amendment of Conservation Order M-157. So that their requirements will be made known to the administrators of the order, the Army and Navy must now apply for specific authorization to accept deliveries of cotton chemical pulp.

The order also was revised so that application for authorization may be made on Forms PD-600 and PD-601, standard chemical forms now being used. Forms for the December allocation must be filed on or before November 5.

Under the order, issued July 1, 1942, no producer may deliver and no buyer may accept any chemical cotton pulp without specific authorization by the Director General for Operations. The amended order still provides exception on deliveries by a producer of 2,000 pounds or less of chemical cotton pulp in any one month, in lots of not more than 500 pounds to any one consumer in any month.

Ethyl Alcohol

October 16, 1942. Holders of A-1-j ratings no longer are excepted from the restrictions on the use and delivery of ethyl alcohol, controlled by General Preference Order M-30, as Amended August 8, 1942.

When the order originally was drawn, the A-1-j rating was intended to make delivery possible under exceptional circumstances only, but the change in priority rating levels served to liberalize deliveries beyond the extent contemplated.

The provision allowing for delivery of ethyl alcohol on A-1-j ratings has been stricken from the order by today's amendment, issued by the Director General for Operations. Inasmuch as

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the rating of A-1-j is no longer high enough to obtain substantial deliveries, this amendment is simply to bring the order into accord with current practice.

Fatty Acids

October 12, 1942. Specific dollars-and-cents prices have been established on wool grease, raw soap stocks, recovered or acidulated soap stocks, distilled fatty acids and stearic and oleic acid, by the Office of Price Administration.

Previously, under Revised Price Schedule No. 53 (Fats and Oils), these articles had ceilings represented either by their October 1, 1941, price or 111 per cent of their November 26, 1941, price, whichever was higher. The new specific ceilings set in Amendment No. 11 on wool grease and Amendment No. 12 on the other products, reflect the average of such previous ceilings. Both amendments are effective October 16,

Fats and Oils

October 27, 1942. Control over the nation's supply of fats and oils has been revised to facilitate deliveries to the armed forces and Lend-Lease by an amendment to Conservation Order M-71, issued by the Director General for Operations. Slight adjustments are made in the quotas for civilian use.

Oils

October 6, 1942. Tightened control over three imported oils—tung, oiticica and rapeseed—has been taken by the Director General for Operations. Amending M-57, requires specific authorization of the Director to use tung oil after November 1, except for users of 35 pounds or less in a month.

Nickel

October 3, 1942. Use of nickel, except where specifically authorized by the Director General for Operations, has been restricted by the War Production Board to implements of war and other products certified by the Army-Navy Munitions Board to be essential in the successful prosecution of the war. This tightening of control over nickel is contained in a revision of Conservation Order M-6-b.

Polyvinyl Butyral

October 12, 1942. Supplementary Order M-154-a, which placed polyvinyl butyral under allocation control, has been revoked by the Director General for Operations. Order M-10 was amended October 10 to include all vinyl polymers in its allocation control, thus obviating the need for M-154-a. Vinyl polymers are used in the manufacture of rubber substitutes.

Polyvinyl Chloride

October 10, 1942. Order M-10, which sets up an allocation system for polyvinyl chloride, was amended today by the Director General for Operations to cover all vinyl polymers.

All of these materials are used as rubber substitutes and many are interchangeable. Increasing demand due to the rubber shortage has made complete allocation necessary.

Resins

October 27, 1942. Because of an acute shortage and increased demand for military uses, para-phenyl-phenol resins have been put under complete allocation and use control by General Preference Order M-254, issued by the Director General for Operations. The resins covered by this order include the Bakelite Corporation's BR-254, BK-3962X, and BR-17,000; and the Reichold Chemical Company's Super-Beckacite 3000.

Talc

October 20, 1942. To provide adequate supplies of steatite talc for military use and prevent its dissipation into uses for which suitable substitutes are available, Conservation Order M-239 has been issued by the Director General for Operations to forbid the use, sale, and delivery of steatite talc for any purpose except four specific uses listed in the order.

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A Complete Check–List of Products, Chemicals, Process Industries

Cellulose

Process for denitration of an elongate article made of or containing nitrocellulose. No. 2,289,520. Frank Reichel and Augustus Craver to Sylvania Industrial Corp.
Cellulose ether composition. No. 2,290,522. Arthur J. Barry and Earle L. Kropscott to The Dow Chemical Co.
Cellulose ethers plasticized with ethers of cashew nut shell liquid. No. 2,290,861. Roger Campbell to The Harvel Corp.
Process for making a nitrocellulose product. No. 2,291,169. Gilbert Moos to The American Oak Leather Co.
Composition comprising cellulose derivatives. No. 2,292,332. Gaetano F. D'Alelio to General Electric Co.

Ceramics, Refractories

Calcium oxide-chromium oxide-aluminum oxide refractory. No. 2,289,383. Gordon Pote.
Vitreous high alumina porcelain. No. 2,290,107. Daniel W. Luks to Frenshtown Porcelain Co.
Composition of matter for making ceramic articles which comprises ceramic materials of an acidic nature and a distinctly acid rubber latex having a pH value within the range 4.5-7. No. 290,366. Raymond C. Benner and Garret Van Nimwegen to The Carborundum Co.
Cellular, dehydrated, amorphous, vitrified, non-crystalline aluminous ceramic carrying and bonding together the grains of a crystalline abrasive, the cells and crystalline grains in said abrasive constituting a disperse phase while the vitrified aluminous material constitutes the continuous phase. No. 2,290,877. John Heany to Heany Industrial Ceramic Corp.
Abrasive material comprising composite silicon carbide grains united by means of a non-crystalline, amorphous, abrasive, aluminous bond. No. 2,290,878. John Heany to Heany Industrial Ceramic Corp.
Spalling-resistant refractory. No. 2,291,917. Norman P. Pitt, Arthur C. Halferdahl and Frank E. Lathe to Canadian Refractories Ltd.
Magnesia refractory for brick and furnace linings. No. 2,291,918. Norman P. Pitt and Lisle Hodnett to Canadian Refractories Ltd.
Process for preparation of insulation material. No. 2,292,012. Joseph R. Parsons to United States Gypsum Co.
Article of manufacture comprising glass coated with at least one of the metals from the group of metals consisting of zirconium and titanium. No. 2,292,026. Horace W. Gillett to Battelle Memorial Institute.
Magnesium oxide insulation. No. 2,292,065. Howard M. Elsey to Westinghouse Elec. & Mfg. Co.

Chemical Specialty

Chewing gum material comprising a pentaerythritol ester of a material selected from the group consisting of rosin, hydrogenated rosin and polymerized rosin. No. 2,289,407. Clyde Boys to Hercules Powder Co.
Disinfectant emulsion. No. 2,289,476. Amos Badertscher to McCormick and Co., Inc.
Insecticide. No. 2,289,541. Walter Ericks, Cos Cob, and Nellie Payne to American Cyanamid Co.
Alkaline cleaning composition. No. 2,289,578. Harry Hull and Joseph Janota, Jr., to The Diversey Corp.
Printing ink. No. 2,289,638. Donald Erickson and Paul Thoma to Michigan Research Laboratories, Inc.
An improved grease composition comprising 5 to 50% of soda soap in mineral lubricating oil, a slight excess of acid and as an inhibitor of oxidation a small amount of guaiacol. No. 2,289,748. Alan Beerbower and Arnold Morway to Standard Oil Development Co.
Process for deoiling citrus fruit skins. No. 2,289,851. Gregg Maxcy.
Method and composition for waxing fruit. No. 2,290,452. Jagan N. Sharma to Food Machinery Corp.
In the aging of beef cuts, the steps of placing the beef cuts in liquid edible oil and holding the beef cuts in the liquid oil under refrigeration until aged. No. 2,290,493. John M. Ramsbottom to Industrial Patents Corp.
Adhesive composition for use in laminating of wood piles and like comprising an oxidizing petroleum asphalt of a melting point of at least about 225°F., from about 5% to about 25% of a microcrystalline petroleum wax, and from about 10% to about 35% of a resinous material compatible therewith. No. 2,290,833. Paul V. Keyser, Jr., and Wallace Eells to Socony-Vacuum Oil Co., Inc.
Chewing gum containing a chewing gum base and a non-toxic alkaline earth metal peroxide in which the said peroxide is in intimate admixture and coated with a hydrogenated fatty oil that will remain solid at high atmospheric temperature, whereby the said peroxide is rendered stable until wetted. No. 2,290,862. Franklin Canning to Gum Laboratories, Inc.
Dry cleaning composition. No. 2,290,870. Lawrence Flett to Allied Chemical & Dye Corp.
Method for preparing a fluid milk product of increased viscosity. No. 2,290,889. Donald Mook to The Borden Co.
Foaming soapless shampoo. No. 2,290,908. Harrison Gunning.
Hydrous printing paste for printing of textile fabrics. No. 2,290,945. Miles Dahlen and Charles Sala and Richard Shimp to E. I. du Pont de Nemours & Co.
Formaldehyde-urea adhesive. No. 2,290,946. William Dearing and Kenneth Meiser.
Portland cement containing about 0.2 to 0.4% by weight of casein to retard the setting rate of a water slurry of said cement at elevated temperatures. No. 2,290,956. Ernst Gruenwald and Harvey Durbin and William Tilley to Lone Star Cement Corp.
Insecticides. Nos. 2,291,192-2,291,193. Lloyd Smith to Henry Wallace.
Adhesive composition, suitable for bonding rubber to textile materials, comprising an admixture of rubber, carbon black, a potentially reactive phenol aldehyde resin and a methylene-containing hardening agent therefor, in an organic solvent for the rubber. No. 2,291,208. Charles Brown and Arthur Brooks to United States Rubber Co.
Stabilization of parasiticides. No. 2,291,262. William ter Horst to United States Rubber Co.
Printing ink and short varnish. No. 2,291,293. Francis Curtis to Monsanto Chemical Co.
Production of wood preserving impregnants. No. 2,291,295. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Stable aqueous mothproofing solution containing as its essential ingredients magnesium silicofluoride and magnesium benzene sulfonate. No. 2,291,473. Hilton Jones.
Process of reducing the tendency of cheese to blow during storage, which comprises incorporating in the cheese before the storage thereof a small amount of a salt selected from the group consisting of the soluble bromates and iodates. No. 2,291,632. Holger Jorgensen to Aktieselskabet Dansk Gaerings-Industri.
Treatment of gelatin. No. 2,292,022. Edward F. Christopher to Industrial Patents Corp.
Window fog and frost preventive composition. No. 2,292,097. Leslie W. Vollmer to Gulf Research & Development Co.
Process for production of cooked and puffed wheat product. No. 2,292,274. John L. Kellogg, Jr., to Helen L. Kellogg.
Method preparing gelatinous material from gelatinous material stock which comprises treating the stock with an aqueous solution of a water soluble salt of an alkaline earth metal separating the salt solution from the stock, treating the stock with a dilute aqueous solution of water soluble alkali, and thereafter extracting the gelatinous material from the treated stock. No. 2,292,315. Edward F. Christopher to Industrial Patents Corp.
Method preparing gelatinous material from bones which comprises heating the bones in a dilute solution of a water soluble soap, separating the solution from the bones, and thereafter extracting the gelatinous material from the bones. No. 2,292,316. Edward F. Christopher to Industrial Patents Corp.

Coal Tar Chemicals

6-hydroxy-8-amino-quinolines in which the nuclear 8-amino group is connected with an amino group of aliphatic character by an aliphatic chain of three carbon atoms, which compounds are in the form of their salts with mineral acids soluble in water. No. 2,291,235. Walter Kikuth to Winthrop Chemical Co., Inc.
Process for producing 4-acetylamino-4′-amino-diphenysulfone which comprises reacting 4.4′-diamino-diphenysulfone with glacial acetic acid by boiling the mixture. No. 2,291,285. Paul Pohls and Robert Behnisch to Winthrop Chemical Co., Inc.
Treatment of high temperature coal tar. No. 2,291,296. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Sulfonated unsymmetrical ketones. No. 2,291,778. Reginald L. Wakeman to Allied Chemical & Dye Corp.
Addition products of 3.4-dehydrocyclotetramethylene sulfone. No. 2,291,798. Detlef Delfs to General Aniline & Film Corp.
17-aminoandrostane. No. 2,292,080. Russell E. Market to Parke, Davis & Co.

Coatings

Method of coating an article with nitrocellulose material. No. 2,289,537. Elvin Bright to Plastics Patents Trust.
Coating composition for ingot molds and the like comprising between .5 and 4.5 parts by weight of a drying oil, between .5 and 4.5 parts by weight of a resin, between 3 and 6 parts by weight of a thinner, and between 1 and 15 parts by weight of a pigment. No. 289,709. Harold Kelly to The Mahoning Paint and Oil Co.
Ester gum coating composition. No. 2,290,133. Robert C. Swain and Pierrepont Adams to American Cyanamid Co.
An ingot mold coating comprising an original layer of tar, and a superposed coating of aluminum paint. No. 2,290,305. Loren J. Westhaver to The American Steel & Wire Co. of New Jersey.
Wax coating composition and method of preparation. No. 2,290,392. Gordon C. Thomas to The Lummus Co.
Method of setting coating compositions. No. 2,290,550. Albert E. Gessler and Clifford J. Rolle to Interchemical Corp.
Wax coating. No. 2,290,563. Toivo A. Kauppi to The Dow Chemical Co.
Method of preparing and applying a surface coating. No. 22,147. Arthur Howald and Leonard Meyer to Plaskon Co., Inc.
Surface coating composition. No. 2,291,091. Durant Robertson to National Lead Co.
Sprayable, blush-resistant, high solids coating composition. No. 2,291,284. John Lowell to E. I. du Pont de Nemours & Co.
Metal coating mixture comprising by volume 3 to 20 parts "refuse palm oil," from 1 to 7 parts turpentine and petroleum oil to make 100 parts, said petroleum oil having a flash point of at least 250 degrees Fahrenheit and a fire point of at least 300 degrees Fahrenheit as determined by the open cup method. No. 2,291,460. Charles Francis.
Coating and impregnating product and process. No. 2,291,794. Ivor M. Colbeth to The Baker Castor Oil Co.
Coating composition containing ester gum. No. 2,291,843. Robert C. Swain and Pierrepont Adams to American Cyanamid & Chem. Corp.
Coating compositions containing East India resin. No. 2,291,844. Robert C. Swain and Pierrepont Adams to American Cyanamid Co.

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East India resin coating compositions. No. 2,291,845. Robert C. Swain and Pierrepont Adams to American Cyanamid Co.
Pipe coating protective composition consisting of a mixture of about equal proportions of an air blown asphalt derived from solvent tar having a melting point of from about 175° F. to 240°F., and a petroleum wax having a melting point of from about 125°F. to 150°F., the mixture having a melting point (R & B) of from about 127°F. to about 150°F. No. 2,291,905. Edgar A. Koenig to Socony-Vacuum Oil Co., Inc.
Wax coating composition. No. 2,292,323. James D. Ingle to Industrial Patents Corp.

Dyes, Stains

Azo dyes. No. 22,133. Frithjof Zwilgmeyer to E. I. du Pont de Nemours & Company.
Azo compounds and material colored therewith. No. 2,289,349. Joseph Dickey and James McNally to Eastman Kodak Co.
Azo compounds and material colored therewith. No. 2,889,376. James McNally and Joseph Dickey to Eastman Kodak Co.
Production of an azo dye. No. 2,289,413. George Ellis, Henry Olpin and John Wright to Celanese Corporation of America.
Azo dye and coloration of cellulose derivatives therewith. No. 2,289,-414. George Ellis, Henry Olpin and John Wright to Celanese Corp. of America.
Dischargeable dyestuff. No. 2,289,461. Victor Salvin, George Ward and George Seymour to Celanese Corporation of America.
Stable solution for producing ice colors. No. 2,290,130. Robert P. Parker and Robert C. Conn to American Cyanamid Co.
Quinhydrones from vat dyestuffs and process of making same. No. 2,290,435. Eduard Kambli and Richard Tobler to Society of Chemical Industry in Basle.
Manufacture of coloring matters of the phthalocyanine series. No. 2,290,906. Samuel Coffey, Norman Haddock and James Jackson to Imperial Chemical Industries, Ltd.
Process of printing cellulose acetate with acid and direct dyestuffs. No. 2,291,052. Charles Miller to E. I. du Pont de Nemours & Co.
Process of preparing azo dyes. No. 2,291,469. Chester Gomeringer to E. I. du Pont de Nemours & Co.
Manufacture of cyanine dyestuffs. No. 2,292,021. Robert Walter, Kreis Bitterfield and Hermann Durr to General Aniline & Film Corp.

Equipment, Apparatus

Process and apparatus for use in the purification of liquids. No. 2,289,669. Alfred Maxton to North American Rayon Corp.
Metallurgical furnace. No. 2,289,719. Clarence Moran to Radiant Combustion, Inc.
Distilling or reclaiming apparatus. No. 2,289,956. John Gans, Grymes Hills and Francis Godfrey Baker to Columbia Appliance Corp.
Vapor and liquid contact apparatus. No. 2,290,162. Leslie B. Bragg to Foster Wheeler Corp.
Distillation apparatus. No. 2,290,209. Henry Rosenthal.
Method of and apparatus for dehydrating liquid products. No. 2,290,-470. Joseph M. Hall to Drying & Concentrating Co.
Chemical feeding device. No. 2,290,599. Irwin G. McChesney.
Apparatus for the continuous degreasing of metal strip by treatment with a volatile grease solvent the vapor of which is heavier than air. No. 2,290,668. William E. Booth to Imperial Chemical Industries Ltd.
Carbon dioxide recovery apparatus. No. 2,290,711. John L. Robinson and Moultrie A. Wrenn to Carbon Dioxide Recovery Corp.
Apparatus for calcining gypsum. No. 2,290,805. Fred Gottschalk and Clair L. Bruner to The Celotex Corp.
Vapor generator. No. 2,290,882. Walter Keenan, Jr. to Foster Wheeler Corp.
Apparatus for treating liquids. No. 2,290,980. Gordon MacLean to The Turbo-Mixer Corp.
Apparatus for making siliceous firers. No. 2,291,289. Games Slayter and John Thomas to Owens-Corning Fiberglas Corp.
Catalytic contact apparatus. No. 2,291,762. Walter Samans to Sun Oil Co.
Apparatus for determination of moisture content of sand and other materials. No. 2,291,771. Cecil W. Stancliffe to Winget Ltd.
Apparatus for applying thermoplastic material onto receptive layers. No. 2,291,955. Charles Emmey.
Gelatin and glue extracting apparatus. No. 2,292,276. Wm. V. Knoll.

Fine Chemicals

Hydrogenated sapogenin transformation product and preparation of same. No. 2,289,373. Russell Marker to Parke, Davis & Co.
Photographic element having removable antihalation layers. No. 2,289,397. John Weber to E. I. du Pont de Nemours & Co.
Production of vanadyl sulfate. No. 2,289,426. Holger Schaumann to E. I. du Pont de Nemours & Co.
Cyclohexyl Guanidine and method of preparing the same. No. 2,289,-543. Ingenuin Hechenbeikner to American Cyanamid Co.
Thioether substituted cyanamides. No. 2,289,544. Ingenuin Hechenbleikner and Christian Best to American Cyanamid Co.
Guanidine ferrocyanide complex. No. 2,289,547. Urner Liddel to American Cyanamid Co.
Mercurated aliphatic nitrile. No. 2,289,590. Anderson Ralston and Miles McCorkle to Armour and Company.
Selenium compounds. No. 2,289,595. Winfield Scott to Wingford Corp.
p-acetylaminobenzenesulfon-(4-acetoanilide). No. 2,289,761. Claus Diehl to Merck & Co., Inc.
Antihalation film. No. 2,289,799. Gale Nadeau and Alfred Slack to Eastman Kodak Co.
Sulfonic ester coupler. No. 289,804. Willard Peterson to Eastman Kodak Co.
Sulfonic ester coupler. No. 2,289,805. Henry Porter and Arnold Weissberger to Eastman Kodak Co.
Process of preparing a solution of 2-mercaptobenzimidazole-5-arsine oxide. No. 2,289,878. Alfred Fehrle and Walter Herrmann and Friedrich Hampe to Winthrop Chemical Co., Inc.
Composition capable of inhibiting agglutination or hemolysis in blood. No. 2,290,146. Ernest Witebsky and Niels C. Klendshoj to The Buffalo Research Associates, Inc.
Bactericidal, germicidal and antiseptic materials. No. 2,290,173 and 2,290,174. Albert K. Epstein and Benjamin R. Harris.
Barbituric acid compound and process of making same. No. 2,290,-274. William G. Bywater and Stephen B. Binkley to Parke-Davis & Co.
Substituted amine derivatives. No. 2,290,281. Henry R. Henze to Parke, Davis & Co.
Diagnostic composition and method. No. 2,290,436. Jonas Kamlet to Miles Labs., Inc.
Dihalogenated ethers. No. 2,290,462. Charles F. H. Allen and James Van Allan to Eastman Kodak Co.
Photochemical stabilization. No. 2,290,474. Lowell B. Kilgore to Kilgore Development Corp.
Therapeutic agent for releasing elemental iodine comprising morpholine periodide in a non-aqueous and non-reacting dispersing medium. No. 2,290,710. Robb V. Rice and George D. Beal to Gane and Ingram, Inc.
Process of preparing a hydroxyquinoline sulfonamide comprising the following steps: Sulfonation of a hydroxyquinoline, blocking the hydroxy group by conversion to an alkyl carbonate group whereby an alkyl sulfoquinoline carbonate is formed, treatment of the alkyl sulfoquinoline carbonate with phosphorus pentachloride to form the corresponding sulfonyl chloride and finally ammoniation of the sulfonyl chloride to the desired product. No. 2,290,846. Carleton Ellis and Bertram Ellis to Ellis Labs., Inc.
Preparation of lactic acid. No. 2,290,926. Samuel Weisberg and Edwin Stimpson to Sealtest, Inc.
Washing water containing in solution gluconic acid and hydrogen dioxide in sufficient amounts substantially to counteract bicarbonate hardness originally present in said water. No. 2,291,085. Henry Lehmkuhl and Myron Cucci to Milk Plant Specialties Corp.
Light-sensitive material and method of making same. No. 2,291,-130. Roelof Jan Hendrik Alink to Hartford National Bank and Trust Co.
Halomethyl ether ketones. Nos. 2,291,526-2,291,527. Herman Bruson and Clinton MacMullen to Rohm & Haas Co.
Halomethyl ethers. No. 2,291,528. Herman Bruson and Clinton MacMullen to Rohm & Haas Co.
Unsaturated hydroxy pregnene derivatives. No. 2,291,643. Russell E. Marker to Parke, Davis & Company.
As an antiseptic colloidal silver bromide-acacia. No. 2,291,735. Marlin T. Leffler to Abbott Labs.
Method recovering silver from film. No. 2,292,207. Le Roy M. Dearing to Eastman Kodak Co.
Hypnotic compound for rectal instillation comprising a solution of a barbituric acid effective in anaesthesia and amylene hydrate. No. 2,292,264. Meyer L. Axelrod.
Method of forming a colored photographic image. No. 2,292,306. Paul W. Vittum and Lot S. Wilder to Eastman Kodak Co.

Industrial Chemicals

Process of preparing wetting, sudsing, and detergent agents. No. 2,289,391. Nathaniel Beverley Tucker to The Procter & Gamble Co.
Table of concentration of potash ores. No. 2,289,527. Francis Tartaron, Allen Cole and James Duke to Phosphate Recovery Corp.
Process for producing acrolein. No. 2,289,534. Hans Wagner to Chemical Marketing Co., Inc.
Method for producing phosphorus. No. 2,289,538. Edwin Buford to Monsanto Chemical Co.
Chloronitroparaffins as insecticides. No. 2,289,546. Hans Lecher and Asa Joyce to American Cyanamid Co.
Process for preparation of high-boiling formals which comprises reacting a formalin solution with propylene in the presence of hydrated boron fluoride as the catalyst and recovering the formal from the reaction product. No. 2,289,548. Donald Loder to E. I. du Pont de Nemours & Co.
Nitro bornyl phenols as insecticides. No. 2,289,550. Richard Roblin, Jr., and Ingenuin Hechenbleikner to American Cyanamid Co.
Treatment of aqueous liquids with halogens. No. 2,289,589. Richard Pomeroy to Wallace & Tiernan Co., Inc.
Amino-acid ester salts of phenols. No. 2,289,599. Frank Smith and John Hansen to The Dow Chemical Co.
Dithionaphthoates and method for preparing them. No. 2,289,649. Albert Hardman to Wingfoot Corp.
Process for the manufacture of polarizing materials. No. 2,289,712. Edwin Land and Cutler West to Polaroid Corp.
Method for the reactivation of catalysts for the hydrogenation of carbon oxide. No. 2,289,731. Otto Roelen, Heinrich Heckel and Franz Hanisch to Hydrocarbon Synthesis Corporation.
Concentration of kyanite. No. 2,289,741. Francis Tartaron to Phosphate Recovery Corp.
Process for preparing improved fish oils. No. 2,289,780. Kenneth Hickman to Distillation Products, Inc.
Preservation of natural oil bearing products during processing to remove oil therefrom. No. 2,289,781. Kenneth Hickman to Distillation Products Inc.
Production of catalysts. No. 2,289,784. Augustus Houghton to Allied Chemical & Dye Corp.
Improvement in process of producing alcohol by fermentation of fermentable sugars derived from amylaceous materials. No. 2,289,808. Gerrish Severson, Lee Underkofler and Lorin Schoene to The Chemical Foundation Inc.
Process for the production of phenols which comprises subjecting alkyl-aryl ethers to the de-etherizing action of hydrogen fluoride. No. 2,289,886. Louis Schmerling to Universal Oil Products Co.
Process of preparing a water-soluble condensation product, which includes warming a sulfonic acid of ortho phenylphenol with an aldehyde, in the presence of naphthalene. No. 2,289,898. Helmut Bohler to Chemische Fabrik von Heyden Aktiengesellschaft.
Process for producing aromatic hydrocarbons. No. 2,289,917. Auguste Lambiotte.

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Manufacture of catalysts. Nos. 2,289,918-2,289,919. Edward Lee and Jacob Elston Ahlberg to Universal Oil Products Co.

Apparatus for oxidizing oil. No. 2,289,953. Blair Aldridge to Union Oil Co. of Calif.

Regeneration of an acid mercuric sulfate reagent used to produce acrolein from propylene with the production of a spent reagent containing mercurous sulfate. No. 2,289,966. Karl Herstein to Acrolein Corp.

Composition for use in retarding the dropping of fruit from a fruit tree comprising naphthalene acetic and a water-dispersible composition comprising partial lauric acid ester of an inner ether of a hexitol. No. 2,289,974. Rowland Leiby to Atlas Powder Co.

Process of purifying a material which is essentially composed of non-conjugated unsaturated hydrocarbons which comprises treating the material with fumaric acid at about 160°-185°C. whereby the fumaric acid selectively reacts with the conjugated hydrocarbon, and separating the unreacted non-conjugated hydrocarbons from the reaction mixture. No. 2,290,054. William B. Johnston to American Cyanamid Co.

Process of stabilizing glyceride oils subject to oxidative deterioration. No. 2,290,064. Sidney Musher to Musher Foundation, Inc.

Manufacture of technical potassium pyroantimonate. No. 2,290,070. Hartmut Richter.

Process of accelerating the ripening and digesting of collagen-containing raw materials of animal origin in lime liquor in the preparation of gelatin and glue, which comprises adding to the lime liquor a compound selected from the class consisting of hydrosulfites and sulfoxylates. No. 2,290,081. Leo Wallerstein and Julius Pfannmuller to Wallerstein Co. Inc.

Esters of glycolic acid. No. 2,290,128. Donald J. Loder and Wilber O. Teeters to E. I. du Pont de Nemours & Co.

Treatment and distillation of pyroligneous liquor. No. 2,290,157. Bernard K. Bright to Eastman Kodak Co.

Process of dehydrating castor oil which comprises heating the same at dehydrating temperatures in the presence of china clay as a dehydration catalyst. No. 2,290,165. Oscar A. Cherry to The Glidden Co.

Preparation of sulfonation derivatives. No. 2,290,167. Richard C. Datin to The Solvay Process Co.

Salts of dimethylene dithiocarbamic acids. No. 2,290,262. Ira Williams and Bernard M. Sturgis to E. I. du Pont de Nemours & Co.

Resinous product having anion exchange properties. No. 2,290,345. Easton Melof to National Aluminate Corp.

Method preparing polycyclic aromatic carboxylic acids. No. 2,290,401. Eugene D. Witman to The Ohio State University Res. Foundation.

Hydrogenolysis process. No. 2,290,439. Charles Wm. Lenth and Ronert N. Du Puis to Association of American Soap and Glycerine Producers, Inc.

Process for rectification of impure alcoholic liquids. No. 2,290,442. Albert Metzl to Societe Anonyme.

Method of preparing gelatinous material from gelatinous material stock which comprises treating the stock with dilute solution of caustic soda containing small amount of a water soluble soap the amount of soap being based upon the weight of the stock, separating the solution from the stock and thereafter extracting the gelatinous material from the treated stock. No. 2,290,538. Edward F. Christopher to Industrial Patents Corp.

Polymeric product prepared by prolonged heating of a mixture of a vinyl aromatic compound and phenylacetylene in amount less than 10% by weight of the mixture at temperatures between 100° and 225°C. No. 2,290,547. Robert R. Dreisbach, Sylvia M. Stoesser and Alden W. Hanson to The Dow Chemical Co.

Process for improving fuel gases of the kind hereinbefore described, whereby leakage of such gases is easily detected, which comprises adding to the said gases a proportion of oenanthal vapour. No. 2,290,555. Anthony J. Hailwood to Imperial Chemical Industrial Ltd.

Chemical process and product thereof. No. 2,290,583. Emil E. Dreger and John Ross to Colgate-Palmolive-Peet Co.

Recovery of phenols and olefins. No. 2,290,602 and 2,290,603. Donald R. Stevens and Joseph B. McKinley to Gulf Res. & Develop. Co.

Alkylation of phenols. No. 2,290,604. Donald R. Stevens and Joseph E. Nickels to Gulf Research & Development Co.

Process for producing fatty acid polyhydric esters from glycerides. No. 2,290,609. Warren H. Goss and Henry Fraser to Henry A. Wallace.

Azeotropical distillation with antimony trichloride. No. 2,290,654. Harry K. Sutherland to Shell Development Co.

Trichlorostyrene and method of preparing same. No. 2,290,758. Arthur A. Levine and Oliver W. Cass to E. I. du Pont de Nemours & Co.

Tetrachlorostyrene and method of preparing same. No. 2,290,759. Arthur A. Levine and Oliver W. Cass to E. I. du Pont de Nemours & Co.

Aqueous dispersions of ethylene polymers. No. 2,290,794. Alfonso M. Alvarado and George L. Dorough to E. I. du Pont de Nemours & Co.

Alkylation of hydrocarbons. No. 22,146. Arthur Goldsby and John Van Gundy to The Texas Co.

Simulated fat and method of preparing the same. No. 2,290,854. Frank Hoy to Hoy Equipment Co.

Ethers of alcohol amines. No. 2,290,880. Morris Katzman and Albert Epstein to The Emulsol Corp.

Halogeno-carboxylic amides. No. 2,290,881. Morris Katzman to The Emulsol Corp.

In the preparation of reactive carbohydrates the improvement which comprises treating a carbohydrate solely with an ammonium salt dissolved in liquid, anhydrous ammonia. No. 2,290,-888. Clemmy Miller and Arthur Siehrs to North American Rayon Corp.

Desulfurizing apparatus. No. 2,290,961. Russell Heuer to Essex Research Corp.

Electrolyte for an electrolytic condenser having a filmed aluminum electrode, comprising an acid and a salt and a hydrous gelatinous compound of aluminum and oxygen. No. 2,290,998. Preston Robinson to Sprague Specialties Co.

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Production of diastatic material. No. 2,291,009. Lee Underkofler to The Chemical Foundation Inc.
Method of making starch solutions. No. 2,291,041. Hans Kauffmann, Paul Margulies and Joseph Ryan to Buffalo Electro-Chemical Co., Inc.
Pine oil composition. No. 2,291,205. Joseph Borglin to Hercules Powder Co
Production of metallic oxides. No. 2,291,206. Urban Bowes.
Oxidation of ketones. No. 2,291,211. Robert Cavanaugh to E. I. du Pont de Nemours & Co.
Production of polar adsorbents. No. 2,291,226. Eric Berkeley Higgins.
Process for producing substantial yields of alkyl substituted cyclohexanes from alkyl cyclopentanes which comprises reacting an alkyl cyclopentane with an olefin hydrocarbon in the presence of a sulfuric acid catalyst. No. 2,291,254. Herman Pines and Vladimir Ipatieff to Universal Oil Products Co.
Production of preservative wood impregnants. No. 2,291,297. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Production of solvents and wood preservatives. Nos. 2,291,298-2,291,299. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Process for providing solvency and toxicity. No. 2,291,300. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Process of toxicity induction. No. 2,291,301. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Production of wood preservatives. Nos. 2,291,302-2,291,303. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Production of solvents and wood preservatives. Nos. 2,291,304-2,291,305. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Production of solvents. Nos. 2,291,306-2,291,313. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Process of solvency induction. No. 2,291,314. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Procees of enhanced solvency induction. No. 2,291,315. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Method of providing solvency induction. No. 2,291,316. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Production of solvents from refined pitch. Nos. 2,291,317-2,291,318. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Solvent production. No. 2,291,320. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Catalytic production of wood preservative. No. 2,291,321. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Producing plasticizers from coal tar. No. 2,291,322. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Production of solvents from coal tar. No. 2,291,323. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Method of producing impregnants. No. 2,291,324. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Method of inducing solvency and toxicity. No. 2,291,325. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Process of toxicity induction. No. 2,291,326. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Process of producing solvents. Nos. 2,291,327-2,291,328. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Process of producing wood preservatives. No. 2,291,329. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Increasing the toxic value of creosote. No. 2,291,330. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Solvents from coal tar. No. 2,291,331. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Solvents from coal tar. No. 2,291,332. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Method of providing solvency induction. No. 2,291,333. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Process of sustained toxicity induction. No. 2,291,304. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Production of wood impregnant from high temperature coal tar fractions. No. 2,291,335. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Method of preparing wood impregnant. No. 2,291,336. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Production of wood preserving oil from refined pitch. No. 2,291,337. Jacquelin Harvey, Jr., to Southern Wood Preserving Co.
Process for the nitration of methane. No. 2,291,345. Owen Rideout to Hercules Powder Co.
Preparation of 2-chlorobutene-2. No. 2,291,375. Oliver Cass to E. I. du Pont de Nemours & Co.
Addition agent for castor machine oils which comprises aluminum stearate and glyceryl monoricinoleate. No. 2,291,384. Marcellum Flaxman to Union Oil Co. of Calif.
Composition comprising a wax-containing oil and a small amount of a condensation product of a polyalkyl polyamine and a fatty acid. No. 2,291,396. Eugene Lieber to Standard Oil Development Co.
Halogenated hydrocarbon product. No. 2,291,403. Arnold Morway, Clark Township and Floyd Miller to Jasco, Inc.
Manufacture of organic condensation products. No. 2,291,425. William Sparks and Donald Field to Standard Oil Development Co.
Liquid phase extraction of glyceride oils and acids. No. 2,291,461. Stephen Freeman to Pittsburgh Plate Glass Co.
Horticultural spray oils. No. 2,291,507. Wesley Sowers to The Pure Oil Co.
Polymerization mixture comprising isobutylene, a diolefin, liquid ethylene, solid ammonia and a Friedel-Crafts type catalyst comprising a solution of aluminum chloride. No. 2,219,510. Robert Thomas and Edward Dahlke to Jasco, Inc.
Process for preparing acylaminomethyl quarternary ammonium compounds. No. 2,291,519. Walter Wirth and Robert Freeman Deese, Jr., to E. I. du Pont de Nemours & Co.
Heating oils. No. 2,291,522. William Backoff and Norman Williams, John O'Loughlin, Harry Moir and John Yule to The Pure Oil Co.
Method for the chlorination of polymeric compounds. No. 2,291,574. Anthony Gleason and Raphael Rosen to Jasco, Inc.
Process for producing phenol from cyclohexanol and cyclohexanone. No. 2,291,585. Edward Bartlett and Edmund Field to E. I. du Pont de Nemours & Co.
Method of making laminated products. No. 2,291,586. Harry Galber and Theodore Dike to I. F. Laucks, Inc.
Monocalcium phosphate and process for producing same. Nos. 2,291,608 and 2,291,609. William W. Cobbs to Monsanto Chemical Co.
Process for removing colloidally dissolved albumens of the nature of proteids, which unfavorably influence the taste, from liquids of the type of beer. No. 2,291,624. Eberhard Heimann and Johann F. Meyer to A.-G. fur Bier-und Weinprodukte.
Thickening of solutions. No. 2,291,634. Morris B. Katzman and Frank J. Cahn to The Emulsol Corp.
Method of preparing arsenate of lead. No. 2,291,642. John F. Les Veaux to Niagara Sprayer & Chemical Co., Inc.
Alkylation of phenols. No. 2,291,804. William S. Gump to Burton T. Bush, Inc.
Process of regenerating sulfate pulp cooking liquors. No. 2,291,833. Walter L. Savell to The Mathieson Alkali Works, Inc.
Material for wrapping pipes and for covering metallic surfaces. No. 2,291,838. Raymond A. Shoan to Dearborn Chemical Co.
Process of preparing styrenes. No. 2,291,915. Robert C. Palmer, Carlisle H. Bibb and Wm. T. McDuffee, Jr., to Newport Industries, Inc.
Process of preparing phosphorus and boron containing compounds and products obtained thereby. No. 2,291,958. Allen D. Garrison to The Texas Co.
Method of bleaching glyceride oils. No. 2,292,027. Eddie C. Glenn to Industrial Patents Corp.
Oxidation of trichlorethylene. No. 2,292,129. Frederick W. Kirkbride to Imperial Chemical Industries Ltd.
Manufacture of silicate-anhydrite compositions. No. 2,292,198. John D. Carter to Philadelphia Quartz Co.
Process of making chemically setting silicate compositions of the nature of mortars, cements, adhesives, plasters, stuccos and the like. No. 2,292,199. John D. Carter to Philadelphia Quartz Co.
Pigmented emulsion and method of producing it. No. 2,292,200. Norman S. Cassel to Interchemical Corp.
Aluminum phenate of an alkyl monohydroxy phenol said alkyl monohydroxy phenol containing an alkyl group having more than four carbon atoms. No. 2,292,205. George H. Denison, Jr., and Arthur C. Ettling to Standard Oil Co. of California.
Composition of matter and process for preventing water-in-oil type emulsions resulting from acidization of calcareous oil-bearing strata. No. 2,292,208. Melvin De Groote and Bernhard Keiser and Charles M. Blair, Jr., to Petrolite Corp.
Amino compound. No. 2,292,212. Joseph B. Dickey and James G. McNally to Eastman Kodak Co.
Photochemical exploration method. No. 2,292,300. Robert O. Smith.
Composition of matter comprising the reaction product of ingredients comprising an aldehyde and di-(acetoacetyl) ethylene diamine. No. 2,292,333. Gaetano F. D'Alelio to General Electric Co.

Leather

In preparation of leather, the improvement which consists of subjecting the skins or hides, subsequent to bating and prior to tanning to the action of a liquor having a pH under 6 and containing pepsin. No. 2,289,993. Julius Pfannmuller and Hans Schleich to Wallerstein Co., Inc.
Artificial leather. No. 2,290,072. Philip F. Robb to Hercules Powder Co.
Process of tanning hides and skins. No. 2,290,284. Carl Riess and Rudolf Watzel to Chemische Fabrik Joh.
Process of manufacturing white leather having an improved light fastness which comprises retanning chrome tanned leather with the condensation product of diphenyl oxide monosulfonic acid with formaldehyde. No. 2,292,067. Carl H. Geister, John T. Chain and Arthur L. Fox to E. I. du Pont de Nemours & Co.

Metals, Alloys

Iron-phosphorus-silicon alloy. No. 2,289,365. Henry Jerabek.
Die steel for hot working. No. 2,289,449. John Nelson to Braeburn Alloy Steel Corp.
Nickel-beryllium alloy. No. 2,289,566. Carlo Adamoli to Perosa Corp.
Powder metallurgy. No. 2,289,569. Alfred Boegehold to General Motors Corp.
Method of making powdered material and the usage thereof. No. 2,289,570. Alfred Boegehold to General Motors Corp.
Sintered article and method of making the same. No. 2,289,571. Alfred Boegehold to General Motors Corp.
Alloy. No. 2,289,593. Charles Sawyer, Bengt Kjellgren and Gerald Christensen.
Process for producing nickel coated ferrous articles. No. 2,289,614. Andrew Wesley and Harry Rollason Copson to The International Nickel Co., Inc.
Manufacture of magnesium. No. 2,289,627. Neil Collins, Los Altos and Gunter H. Gloss to Marine Magnesium Products Corp.,
Alloy containing approximately twenty per cent (20%) of chromium fron 1/30 of one per cent (1%) to 1/7 of one per cent (1%) of boron and the balance, nickel. No. 2,289,640. Erich Fetz to Wilbur B. Driver Co.
Electrical resistance alloy containing approximately 60% of nickel, approximately 15% of chromium, an appreciable amount of boron, up to 2%, and the balance, iron. No. 2,289,641. Erich Fetz to Wilbur B. Driver Co.
Production of shaped articles from metal powder. No. 2,289,787. Kurt Kaschke and Hand Vogt.
Ferrous powder metallurgy. No. 2,289,895. Claire Balke and Keith Misegades to Fansteel Metallurgical Corp.
Method of and apparatus for thermochemically removing metal from ferrous metal bodies. No. 2,289,968. Everett Jones to The Linde Air Products Co.
In froth flotation of copper iron sulfide from ores containing the same step which comprises subjecting the ore to froth flotation in the presence of a flotation reagent consisting of at least one primary amine compound chosen from the group consisting of primary aliphatic amines having at least twelve carbon atoms and

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water-soluble salts thereof. No. 2,289,996. Anderson W. Ralston and Ervin W. Segebrecht to Armour and Company.
Aluminum alloy. No. 2,290,026. Walter Ronsack to The National Smelting Company.
Process of producing molybdenum containing alloys. No. 2,290,194. Arthur Linz to Climax Molybdenum Co.
Process of metal recovery. No. 2,290,206. Stephen C. Pool to Eastman Kodak Co.
Method of treating cast iron. No. 2,290,272. Charles O. Burgess to Electro Metallurgical Co.
Composition and method for treating cast iron. No. 2,290,273. Charles O. Burgess to Electro Metallurgical Co.
Process for preparing lead alloys. No. 2,290,296. Johann Siegens and Oskar Roder to American Lurgi Corp.
Process for separating nickel and cobalt in solutions. No. 2,290,313. Martinus H. Caron.
Electrodeposition of metals. No. 2,290,342. Rudolf Lind, William J. Harshaw and Kenneth E. Long to The Harshaw Chemical Co.
Method of coloring aluminum and aluminum alloy articles having on their surface an artificially produced oxide coating, comprising immersing the article in a solution containing ferric oxalate. No. 2,290,364. Martin Toserud to Aluminum Co. of America.
Process for separation and recovery of metals from metallic alloys. No. 2,290,549. John D. Gat.
Phosphorous copper alloy. No. 2,290,684. Walter A. Graham to Westinghouse Electric & Mfg. Co.
Manufacture of metal products. No. 2,290,734. Herman A. Brassert to Minerals & Metals Corp.
Method of recovering manganese. No. 2,290,843. Selwyne P. Kinney to Minerals and Metals Corp.
Method of removing scale from cupreous articles. Nos. 2,291,201-2,291,202. William Bassett, Jr., and Clermont Snyder and Willis MacLelland to Anaconda Wire and Cable Co.
Apparatus for casting metal. No. 2,291,204. Jesse Betterton and Frank Poland to American Smelting and Refining Co.
Method for refining steel. No. 2,291,221. Robert Gibson.
Metallurgical process. No. 2,291,222. Robert Gibson.
Solder flux. Nos. 2,291,399-2,291,401. Mike Miller to Aluminum Company of America.
Rod of steel having a coating of ferro chrome, ferro manganese and graphite powder cemented together and located around the rod, the weight of steel approximating 80% of the completed rod and the coating approximating 20% thereof. No. 2,291,482. William McLott.
Method of purifying zinc concentrates. No. 2,291,520. Carl Anderson, Rudolph Stengl and Frederick Abbott to Mahoning Mining Co.
Method of purifying zinc concentrates. No. 2,291,521. Carl Anderson, Rudolph Stengl and Frederick Abbott to Mahoning Mining Co.
Electrodeposition of metals. No. 2,291,590. Rudolf Lind, William Harshaw and Kenneth Long to The Harshaw Chemical Co.
Manufacture of manganese alloys and the like. No. 2,291,685. Herman A. Brassert to Minerals and Metals Corp.
Porous metal. No. 2,291,734. Fritz V. Lenel to General Motors Corp.
Production of steel. No. 2,291,842. Jerome Strauss to Vanadium Corp. of America.
Process for the production of metal alloys. No. 2,291,865. Hans Bernstorff and Albert Allendorfer to Chemical Marketing Co., Inc.
Ferromagnetic material. No. 2,292,191. Weldon H. Brandt and Walter R. Woodward to Westinghouse Elec. & Mfg. Co.
Iron sulfide metallurgy. No. 2,292,305. Alfred M. Thomsen.

Paints, Pigments

Manufacture and use of fluorescent lead sulfate materials. No. 2,289,384. Frank Renwick to Ilford Ltd.
Production and use of fluorescent materials. No. 2,289,997. Frank Forster Renwick and Hardwick Slingsby Tasker to Ilford, Ltd.
Production of titanium oxide. No. 2,290,111. Henry F. Merriam and Maxwell J. Brooke to General Chemical Co.
Manufacture of titanium oxide. No. 2,290,112. Henry F. Merriam and Maxwell Brooke to General Chemical Co.
Titanium solution manufacture. No. 2,290,113. L'Roche G. Bousquet and Maxwell J. Brooks to General Chemical Co.
Zinc sulfide pigment. No. 2,290,279. Clayton W. Farber to The New Jersey Zinc Co.
Preparation of rutile titanium dioxide. No. 2,290,539. Sandford S. Cole to National Lead Co.
Preparation of titanium oxide. No. 2,290,922. Fredric Verduin to The Sherwin-Williams Co.
Titanium dioxide pigment. No. 2,291,082. Joseph Jarmus and Walter Plechner to National Lead Co.
Colored organic pigment. No. 2,291,452. Miles Dahlen and Stanley Detrick to E I. du Pont de Nemours & Co.

Paper, Pulp

Bleaching of ground wood pulp with preliminary bisulfite treatment. No. 2,290,601. Joseph S. Reichert, Samuel A. McNeight and Howard L. Potter to E. I. du Pont de Nemours & Co.
Paper having high wet strength and process of producing the same. No. 2,291,079. Raymond Hofferbert to American Cyanamid Co.
Method of producing paper having high wet strength and product thereof. No. 2,291,080. Raymond Hofferbert to American Cyanamid Co.

Petroleum

Catalytic reforming. No. 2,289,375. William Mattox to Universal Oil Products Co.
Centrifugally dewaxing oils. No. 2,289,431. Erland Jung to Aktiebolaget Separator-Nobel.
Sulfurization process. No. 2,289,437. Edwin Knowles and Frederic McCoy to The Texas Co.
Sulfurization of esters. No. 2,289,438. Edwin Knowles and Frederic McCoy to The Texas Co.
Lubricant comprising a viscous hydrocarbon oil and a halogenated ester of a phosphorus acid. No. 2,289,509. William Malisoff to The Atlantic Refining Co.
Treatment of hydrocarbon oils. No. 2,289,530. Denneth Thompson, to The Atlantic Refining Co.
Soluble oil and transparent emulsion. No. 2,289,536. William Bradley to Union Oil Co. of Calif.
Antiknock motor fuel. No. 2,289,605. Adrianus van Peski to Shell Development Co.
Catalytic motor fuel production. No. 2,289,716. Robert Marschner to Standard Oil Co.
Cracking oils with catalysts. No. 2,289,757. Gerald Connolly to Standard Oil Development Co.
Process for the separation of fluid olefins containing more than two carbon atoms to the molecule from saturated hydrocarbons of the same boiling range. No. 2,289,773. Edwin Gilliland to Standard Oil Development Co.
Polymerization of low molecular olefins. No. 2,289,778. Paul Leuna to Standard Catalytic Co.
Art of Refining. No. 2,289,793. Edward Martin to Sinclair Refining Co.
Improved lubricating composition comprising a mineral lubricating oil and small amounts of polyvalent metal salts selected from each of the groups consisting of aluminum, and alkaline earth metal salts. No. 2,289,795. John McNab to Standard Oil Development Co.
Art of cracking in manufacture of gasoline. No. 2,289,839. Eugene Herthel to Sinclair Refining Co.
Process for sweetening sour hydrocarbon distillates which comprises treating the same with a solid adsorbent material having adsorbed thereon an additive compound of a copper salt and ammonia. No. 2,289,924. Jacque Morrell and Wayne Benedict to Universal Oil Products Co.
Extreme pressure lubricant. No. 2,290,032. Robert E. Burk to The Standard Oil Co. of Cleveland, Corp of Ohio.
Catalytic aromatization of hydrocarbons. No. 2,290,033. Robert E. Burk and Everett C. Hughs to The Standard Oil Co. of Cleveland. Corp. of Ohio.
Reissue. **Refining of oil.** No. 22,135. Richard O. Bender to Sinclair Refining Co.
Reissue. **Refining of oil.** No. 22,136. Richard O. Bender to Sinclair Refining Co.
Reissue. **Refining of oil.** No. 22,137. Richard O. Bender to Sinclair Refining Co.
Process for breaking petroleum emulsions. No. 2,290,154. Charles M. Blair, Jr., to Petrolite Corp. Ltd.
Conversion of straight chain olefins to isoparaffins. No. 2,290,189. Vladimir N. Ipatieff and Herman Pines to Universal Oil Co.
Alkylation of aromatic hydrocarbons. No. 2,290,211. Raymond E. Schaad to Universal Oil Products Co.
Lubricant. No. 2,290,316. Elmer W. Cook to Tide Water Associated Oil Co.
Process for breaking petroleum emulsions. Nos. 2,290,411 to 2,290,416. Melvin De Groote and Bernhard Keiser to Petrolite Corp. Ltd.
Process for breaking petroleum emulsions. No. 2,290,417. Melvin De Groote and Bernhard Keiser to Petrolite Corp. Ltd.
Catalytic process for treating hydrocarbons. No. 2,290,845. Vanderveer Voorhees to Standard Oil Co.
Beneficiation of lubricants. Nos. 2,290,859-2,290,860. Robert Burk and Everett Hughes to The Standard Oil Co.
Stabilized liquid hydrocarbon. No. 2,290,872. Delton Frey to The Lubri-Zol Corp.
Process for treating gaseous mixtures. No. 2,290,957. Karl Hachmuth to Phillips Petroleum Co.
Lubricating composition suitable for use in metal working operations, which comprises a stable aqueous emulsion containing mineral oil, a saponified component derived from the fatty acid mixture obtainable from palm oil, and a phosphorus-containing substance effective to increase the load-carrying capacity of the composition. No. 2,291,066. Stanley Waugh to Tide Water Associated Oil Co.
Lubricant. No. 2,291,166. Oscar Maag to The Lubri-Zol Development Corp.
Viscous hydrocarbon petroleum oil, normally tending to deteriorate in the presence of oxygen, in intimate contact with an undissolved oil-insoluble water-insoluble, dilute-alkali-insoluble, film-forming, basic amine resin, in sufficient amount to materially inhibit said deterioration of said oil. No. 2,291,214. Melvin Dietrich to E. I. du Pont de Nemours & Co.
Polymerization of olefins. No. 2,291,216. Clarence Gerhold to Universal Oil Products Co.
Process for refining hydrocarbon distillates. No. 2,291,276. Wayne Benedict to Universal Oil Products Co.
Catalytic cracking. No. 2,291,292. Robert Burk to The Standard Oil Co.
Process for isomerizing saturated hydrocarbons. No. 2,291,376. Harry Cheney to Shell Development Co.
Lubricant comprising a lubricating oil and a sulfurized isobutylene polymer, said isobutylene polymer having a molecular weight above about 1,000. No. 2,291,404. Arnold Morway to Jasco, Inc.
Recovering nitrogen bases from mineral oils. No. 2,291,419. Barney Strickland to Standard Oil Development Co.
Internal combustion engine fuel comprising a liquid hydrocarbon fuel having a viscosity below 50 seconds Saybolt Universal at 100°F., the boiling range of the hydrocarbon content of which has remained substantially unaltered and to which has been added from about 0.1% to about 5.0% by weight, based on the amount of fuel, of a liquid aromatic ester of phosphoric acid containing at least one aromatic radicle having a molecular weight of 100 or more. No. 2,291,442. Shailer Bass and Eldor Graves to The Lubri-Zol Corp.
Process for treatment of hydrocarbons. No. 2,291,581. Walter Schulze to Phillips Petroleum Co.
Process and apparatus for polymerizing olefins. No. 2,291,638. Ward E. Kuentzel, Carl M. Hull and Emmet R. Kirn to Standard Oil Co.
Recovery of refined products from tall oil. No. 2,291,824. Isador Miller.
Catalytic conversion of hydrocarbons. No. 2,291,885. Gustav Egloff to Universal Oil Products Co.
Process for refining hydrocarbon distillate containing gasoline to

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improve the antiknock properties thereof. No. 2,291,886. Gustav Egloff to Universal Oil Products Co.
Preparation of drilling muds. No. 2,292,267. Allen D. Garrison to The Texas Co.
Liquid lubricating oil composition comprising a petroleum lubricating oil and a metal salt of an alkyl mono-ester of an alkenyl substituted succinic acid, the metal being selected from group consisting of calcium, aluminum, barium, cadmium, chromium, magnesium, nickel, stannous tin and zinc. No. 2,292,308. Franklin M. Watkins to Sinclair Refining Co.

Resins, Plastics

Synthetic polymer. No. 2,289,377. John Miles, Jr., to E. I. du Pont de Nemours & Co.
Process of making phenolic resins direct from tar acid oils. No. 2,289,478. Walter Brown to Jones & Laughlin Steel Corp.
Polymerization of water soluble polymers. No. 2,289,540. Harry Dittmar and Daniel Strain to E. I. du Pont de Nemours & Co.
Composition for casting cellulose acetate sheeting. No. 2,289,739. Cyril Staud and Gustave Bachman to Eastman Kodak Co.
Method of plasticizing polymerized styrene that consists in mixing therewith octahydrophenanthrene and octahydroanthracene. No. 2,289,743. Arthur Warner and Archibald New to International Standard Electric Corp.
Plasticization of polymerized styrene. No. 2,289,744. Arthur Warner and Archibald New to International Standard Electric Corp.
Process of polymerization. No. 2,289,765. Charles Fields to E. I. du Pont de Nemours & Co.
Protein-polyamide mixture. No. 2,289,775. George De Witt Graves to E. I. du Pont de Nemours & Co.
Polymerization product of styrene and unsaturated esters and method of making same. No. 2,290,164. Edgar C. Britton, Harry Borden and Walter J. LeFevre to The Dow Chemical Co.
Flexible non-tacky, plasticized polyvinyl butyral pellicle of a thickness of about .001 to .002 of an inch, the plasticizing material consisting of not less than 5.2% and not more than 30% castor oil. No. 2,290,180. Albert Hershberger to E. I. du Pont de Nemours & Co.
Method of preparing a wax-isobutylene polymer coating composition. No. 2,290,393. Gordon C. Thomas to The Lummus Co.
Vinyl alcohol acrylic or methacrylic ester copolymers. No. 2,290,600. Harry T. Neher and La Verne to Rohm & Haas Co.
Synthetic resin from phenols and acetylenic acids. No. 2,290,649. Alexander D. Macallum to E. I. du Pont de Nemours & Co.
Condensation product of ingredients comprising an aliphatic aldehyde and maleic diamide. No. 2,290,674. Gaetano F. D'Alelio to General Electric Co.
Condensation product of an aliphatic aldehyde and an unsaturated amide. No. 2,290,675. Gaetano F. D'Alelio to General Electric Co.
Yarn conditioning process and composition therefore. No. 2,292,213. Joseph B. Dickey and James G. McNally to Eastman Kodak Co.
Resinous composition of matter. No. 2,291,416. William Sparks and Donald Field to Standard Oil Development Co.
Molding composition consisting of finely divided wood in its natural state and a primary amine, as the essential constituents thereof. No. 2,291,432. Raymond Hatch to General Timber Service, Inc.
Molding composition consisting of a relatively dry mixture of finely divided wood in its natural state and a compound from the class consisting of aliphatic alcohols, alcohols of the furan series, cyclohexanol, and benzyl alcohols, as the essential constituents thereof. No. 2,291,433. Raymond Hatch to General Timber Service, Inc.
Method for making plastic compositions. No. 2,291,697. Henry L. Cox and Jacob D. Matlack to Carbide & Carbon Chemicals Corp.
Process of producing a hardened light-weight composition which comprises incorporating a tenacious stable foam comprising water, starch and saponin with a stiff plastic mass of potentially hardenable material, said mass being incapable of plastic flow under its own weight, molding the resulting mixture under pressure, and hardening the shaped article thus produced. No. 2,292,011. Joseph R. Parsons to United States Gypsum Co.
Plastic material from diphenyl and alkylene halides and compositions thereof. No. 2,292,164. Robert L. Sibley to Monsanto Chemical Co.

Rubber

Process of spinning artificial silk. No. 2,289,657. Ewald Knehe and Franz Hoelkeskamp to American Bemberg Corp.
Process of preparing powdered or granular rubber. No. 2,289,672. James Merrill to Wingfoot Corp.
Chlorinated rubber coating composition. No. 2,290,132. Robert C. Swain and Pierrepont Adams to American Cyanamid Co.
Process of vulcanizing rubber which comprises heating rubber and sulfur in the presence of an N, N dialkyl cyclohexylamine salt of a dialkyl dithiocarbamic acid." No. 2,290,524. David J. Beaver to Monsanto Chemical Co.
Method of preserving a rubber which comprises treating a rubber with a product obtained by admixing 2,2,4 trimethyl dihydro quinoline with a strong non-oxidizing mineral acid and heating at a temperature above 130°C. No. 2,290,561. Joseph R. Ingram to Monsanto Chemical Co.
Method coagulating aqueous dispersions of or containing rubber. No. 2,290,567. James W. MacKay to Monsanto Chemical Co.
Method of manufacturing cellular rubber. No. 2,290,622. Mitchell Carter to The Firestone Tire & Rubber Co.
Process of vulcanizing a rubber in the presence of dithiazolinyl disulfide and a number of the class consisting of monocarboxylic acids and their metallic salts. No. 2,290,642. Paul C. Jones and Roger A. Mathes to The B. F. Goodrich Co.
Rubber material and method of and composition for making same. No. 2,290,729. George W. Blair, Charles E. Bradley and John F. Schott to Mishawaka Rubber and Wollen Mfg. Co.
Method for the production of sponge rubber. No. 2,290,736. Malcolm R. Buffington and Ellery K. Files to Mishawaka Rubber & Wollen Mfg. Co.
Manufacture of cellular rubber material. No. 2,291,213. George Cuthbertson to United States Rubber Co.
Rubber bonded to regenerated cellulose. No. 2,291,700. Henry Dreyfus to Celanese Corp. of America.
Method improving physical properties of rubber. No. 2,291,988. Robert L. Sibley to Monsanto Chemical Co.
Accelerator for catalytic hydrogenation of sugars. No. 2,292,293. Robert S. Rose, Jr., to Atlas Powder Co.

Textiles

Process of conditioning yarn composed of or containing cellulose acetate to render it more amenable to textile operations. No. 2,289,760. Joseph Dickey and James McNally to Eastman Kodak Co.
Process and apparatus for the production of artificial fibers and the like. No. 2,289,860. Dale Babcock to E. I. du Pont de Nemours & Co.
Manufacture and production of artificial filaments, threads and the like. No. 2,290,789. Robert L. Wormell to Courtaulds Ltd.
Process of preparing shade cloth which comprises the improvement of applying directly to an uncoated cloth a composition containing an acid acceptor consisting substantially of colloidal zinc oxide, removing all of the ingredients of the said composition except the acid acceptor, and thereafter applying a cellulose derivative coating. No. 22,145. Cornelium Alt to E. I. du Pont de Nemours & Co.
Method for controlling the proportion of soluble lead in spinning baths for the use in the manufacture of yarn from viscose. No. 2,290,895. Kenneth Smith to North American Rayon Corp.
Production of artificial filaments. No. 2,290,929. William Whitehead to Celanese Corp. of America.
Production of colored textile and other materials. No. 2,290,949. Henry Dreyfus to Celanese Corp. of America.
Production of colored textiles and other materials. No. 2,290,952. George Ellis and Frank Brown to Celanese Corp. of America.
Method for improving cellulosic textile materials having free hydroxyl groups. No. 2,291,021. Louis Bock and Alva Houk to Rohm & Haas Co.
Method of improving the dyeing properties of artificial textile materials. No. 2,291,061. Paul Schlack to Walther H. Duisberg.
Manufacture of improved artificial materials which comprises increasing the resilience of artificial filaments of a proteinaceous substance, by heating said filaments with elementary sulfur to cause reaction between the protein and the sulfur. No. 2,291,701. Henry Dreyfus to Celanese Corp. of America.
Viscose spinning process. No. 2,291,718. Emil Hubert, Adolf Hamann and Karl Weisbrod to Walther H. Duisberg.
Method producing stabilized yarns. No. 2,291,774. William I. Taylor, Leslie B. Gibbins and Angus S. Bell to Celanese Corp. of Amer.
Yarn conditioning process. No. 2,292,211. Joseph B. Dickey to Eastman Kodak Co.

Abstracts of Foreign Patents

Collected from Original Sources and Edited

Those making use of this summary should keep in mind the following facts:

Belgian and Canadian patents are not printed. Photostats of the former and certified typewritten copies of the latter may be obtained from the respective Patent Offices.

English *Complete Specifications Accepted* and French patents are printed, and copies may be obtained from the respective Patent Offices.

In spite of present conditions, copies of all patents reported are obtainable, and will be supplied at reasonable cost.

This digest presents the latest available data, but reflects the usual delays in transportation and printing. Your comments and criticisms will be appreciated.

CANADIAN PATENTS

Granted and Published August 26, 1942 (*Cont'd*)

Process of making sensitized bodies for blueprints of the type in which a light-sensitive ferrioxalate salt is altered by light to produce insoluble ferrous oxalate. No. 399,205. The Frederick Post Company. (Walter M. Hinman and Walter G. Hollmann).

Process for the manufacture of ketones comprising subjecting the vapors of secondary alcohols to the action of copper coated with zinc oxide at a temperature ranging between 650° and 750°F. No. 399,215. Standard Alcohol Company. (Clayton M. Beamer).

Process of simultaneously producing zinc sulfate and iron oxide which comprises mixing a zinc-containing material having zinc present to a major extent with ferrous sulfate, heating the said mixture to a temperature not lower than about 650°C. and up to about 750°C. to cause formation of zinc sulfate and of iron oxide, and then leaching the zinc sulfate from the heated mixture whereby a solution of relatively pure zinc sulfate is obtained and a residue of red iron oxide capable of being used as a pigment is produced. No. 399,236. C. K. Williams & Co. (Carl R. C. C. Wespy).

Process and apparatus for heat and chemicals recovery in a multiple chamber furnace from waste liquids containing combustible constituents and chemicals to be recovered. No. 399,244. John Phillips Badenhausen and Day and Zimmerman, Incorporated. (John P. Badenhausen).

Process and furnace for the recovery of heat and chemicals from liquid wastes. No. 399,245. John Phillip Badenhausen and Day and Zimmerman, Incorporated. (John P. Badenhausen).

Process for producing a proteolytic enzyme from ficus latex in crystalline form which comprises pretreating the crude latex by filtration to remove the solid and semisolid constituents, and concentrating the treated liquid to thereby facilitate separation of the crystallized material. No. 399,253. Merck & Co., Inc. (Alphonse Walti).

Process for the recovery of type metal comprising lead, antimony and tin from dross consisting in fusing the dross with a mixture of zinc chloride and a salt having a low fusing point. No. 399,255. Hans Arne, Gösta Gunnelius and Nils Halvard Liander.

Apparatus for continuously feeding molten metal into a plurality of molds for the production of continuous ingots. No. 399,257. Siegfried Junghans.

Electrolyzing apparatus for producing hypochlorite of soda free from alkali by electrolysis of sodium chloride or a mixture of sodium chloride with potassium chloride and pure water in the absence of air. No. 399,260. Pierre Max Raoul Salles.

Granted and Published September 16, 1941

A dichroic light-polarizer consisting of a transparent sheet of an organic plastic having substantially oriented, long, straight-chain molecules, some of which are dehydrated, the light-polarizing properties of said polarizer deriving essentially from said dehydrated molecules. No. 399,265. Edwin Herbert Land and Howard Gardner Rogers.

Method of preparing di-(aminoarylsulfon)-amide which comprises reacting an acetylaminoarylsulfon chloride with an acetylaminoarylsulfonamide and hydrolyzing the acetylamino group. No. 399,301. American Cyanamid Company. (Elmore H. Northey).

Method of producing lower alcohols by hydrogenolysis of a substance selected from the group comprising sugars, dextrins and sugar alcohols, which comprises subjecting such substances to the action of gaseous hydrogen at pressures between 800 and 3000 pounds per square inch at temperatures between 150 and 300°C. while such substance is incorporated in a vehicle comprising methyl alcohol and while such substance is in contact with a catalyst selected from the group comprising copper-aluminum oxide and copper-chromium oxide. No. 399,306. Association of American Soap and Glycerin Producers, Inc. (Charles W. Lenth and Robert N. DuPuis).

Method of producing from coal and petroleum tars, pitches of lower temperature susceptibility than ordinary tar pitches of the same melting point. No. 399,310. The Barrett Company. (Wilfred McKinley Bywater).

Electrically insulating material comprising fragments of mica bonded tgoether with a cementing agent comprising a polyvinylal resin. No. 399,316. Canadian General Electric Company Limited. (William H. Miller).

Process for the manufacture of insoluble anhydrite. No. 399,319. Canadian Industries Limited. (Roy W. Sullivan).

Carbon solvent and lubricant suitable for heavy duty lubrication comprising approximately: benzol 25 gals., nitrobenzene 6.75 gals., trinitrobenzene 2 ozs., naphthalene 22 pounds, pyridine 1 quart and oil 20 gals., of which mixture 6% by weight is admixed with 1.5% vegetable oil, 0.5% aluminum stearate and 92% paraffin wax. No. 399,321. Carsolac Corporation. (Roy L. Buffington and Phillip H. Elliott).

Method of embalming comprising injecting into the vascular system, tissues and cavities of the body an embalming fluid characterized by containing an acetal as an active ingredient. No. 399,335. The Dodge Chemical Company. (William B. O'Brien).

Apparatus for melting readily oxidizable metals such as magnesium. No. 399,337. The Dow Chemical Company. (Claire S. Harris).

Process for providing a rubber article with a matt finish. No. 399,338. Dunlop Tire and Rubber Goods Company Limited. (Alfred Niven, Edward A. Murphy and Evelyn W. Madge).

Process for the reduction of ferric compound which comprises passing sulfur dioxide into a solution containing a ferric compound in the presence of activated carbon. No. 399,344. General Chemical Company. (Maxwell J. Brooks).

Process for crystallizing sodium aluminum sulfate which comprises adding a hot aqueous solution of sodium aluminum sulfate containing between 35 and 49% $Al_2(SO_4)_3.Na_2SO_4$ to a cool aqueous slurry of sodium sulfate. No. 399,345. General Chemical Company. (Ralph S. Park).

Method and apparatus for removing vapors from granular solids. No. 399,352. Hydro-Carbon Foundation. (Carl T. Loughrey).

Method of preparing a mixture of carbon monoxide and hydrogen for catalytic synthesis. No. 399,356. The M. W. Kellogg Company. (George Roberts, Jr.).

Method of converitng methane and carbon dioxide into hydrogen and carbon monoxide. No. 399,357. The M. W. Kellogg Company. (Earl W. Riblett).

Method of beneficiating inferior cement raw materials of the class comprising argillaceous limestones, marl and chalks containing silica and a proportion of at least one silicate mineral of relatively slow settling rate in water and in excess of that desired for an ultimate cement raw material mixture. No. 399,376. Separation Process Company. (Charles H. Breerwood).

A sheet metal vessel having an aluminum-containing layer on the bottom thereof, said layer being applied by casting, and means for keying said layer to the bottom comprising key surfcaes formed on said bottom. No. 399,375. Joseph Sankey and Sons, Limited. (Auguste Albertini).

Artificial leather sheet material including a body portion comprising from 50 to 70% of felted and compressed wood pulp fibers and a binder material for the fibers, said wood pulp fibers extending in all directions with no defined directional arrangement, the said binder material consisting of homogeneous dehydrated latex, and blood albumin, tanned in situ. Tufide Products Corporation. (Horace A. Sheesley).

Cyclic process for making combustible gas from petroleum. No. 399,391. The United Gas Improvement Company. (Newcomb K. Chaney).

Aluminum alloy for use without heat treatment consisting of about 1.75% copper, 1.50% tin, 0.20% titanium, 0.75% zinc, 0.90% magnesium, 0.25% chromium, and the balance aluminum. No. 399,397. Edward A. Schmeller, John Schmeller, Sr., John L. Schmeller and Frank I. Schmeller. (Edward A. Schmeller).

Method of determining the mineral oil content of earth samples. No. 399,409. Ralph H. Fash. (John G. Campbell).

Lignin material which has been subjected to an oxidizing treatment for use in electroplating as a solvent for the metal or metals to be plated. No. 399,411. The Mead Corporation. (Wilhelm Sailer).

Process for coating objects with polyvinyl chloride. No. 399,414. I. G. Farbenindustrie A. G. (Georg Wick and Arnd Iloff).

Process for the production of a highly disperse potassium iron chromate pigment. No. 399,415. I. G. Farbenindustrie A. G. (Wilhelm Müller and Leo Spies).

Process for the removal of silica from alumino-silicates, especially clays. No. 399,416. I. G. Farbenindustrie A. G. (Eduard Zintl, Wilhelm Braüning and Walter Krings).

Process for the production of colored regenerated leather with the addition of rubber latex. No. 399,417. International Latex Processes Limited. (Giacomo Galimberti).

Multicellular or sponge glass body having at least one reinforcing element situated within said body. No. 399,418. Société Anonyme des Manufactures des Glaces et Produits Chimiques de Saint-Gobain, Chauny et Cirey. (Bernard Long).

Process for the manufacture of calcium carbide comprising heating calcium sulfide with carbon or a carbonaceous material consisting mainly of carbon, such as coke, brown coal or charcoal, in an atmosphere of a gas from the group consisting of inert gases and reducing gases. No. 399,420. Charles Henry Harrison).

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Granted and Published September 23, 1941.

Coal treating method for treating coal containing loose material in finely divided particles which consists in taking degreasing still oil, heating it to a temperature of 100-400°F., and spraying the heated oil onto the material to be treated. No. 399,430. Robert George Dibble.

Vaginal tampon comprising a cylindrical pad formed by rolling a plurality of overlying strips of absorbent paper and a porous fabric bag enclosing pad. No. 399,433. Charles Rapelje Hill.

Catamenial tampon comprising a preformed dissolvable tubular member and a pad within said member having a liquid absorptive capacity of approximately three quarters of a fluid ounce, one end of said member being rounded and substantially closed, the other end of said member being at least partially open. No. 399,434. Charles Rapelje Hill.

White cast iron processing for quick-annealing castings with the aid of a water quench in the short cycle of time of 5-1/2 hours or less. No. 399,435. Collet Jones.

Self-priming centrifugal pump capable of operating in either a vertical or a horizontal position. No. 399,436. Harry E. LaBour.

Cast steel grinding medium and method for producing it. No. 399,441. Alexander Colin Munro.

Synthetic fabric composed of artificial filaments or fibers of substantially similar shape in cross-section, said filaments or fibers being of greater cross-section in one direction than in a direction at right angles thereto. No. 399,443. William T. Porter.

Composite aluminum body comprising a core and a coating and characterized by the adaptability of said coating to join with other aluminous bodies in the presence of a flux and heat without distortion of said core, said coating containing from about 2-12% silicon and being integrally joined to said core by an alloy bond. No. 399,456. Aluminum Company of America. (Gustav O. Hogland).

Coating machine for applying coatings to sheet material. No. 399,462. American Can Company. (Horace J. Paynter).

Producing p-substituted benzenesulfonylguanidine compounds by reacting a p-X-benzene-SO_2-halogen with a guanidine, in which X is a group convertible into an amino group. No. 399,463. American Cyanamid Company. (Philip S. Winnek).

Preparing cyanuric chloride by polymerizing cyanogen chloride in a closed vessel in the presence of an inert diluent and a mineral acid catalyst soluble in said diluent, the proportion of diluent to cyanogen chloride being greater than 2:1. No. 399,464. American Cyanamid Company. (Vartkes Migrdichian).

Process of producing naphthalene in the form of aggregates of individual crystals which are firmly bonded together along their basal planes. No. 399,469. The Barrett Company. (Stuart P. Miller).

Preparing an inorganic insulating material for the making of vacuum-tight seals therewith by mixing from 0.5-10% by weight of materials selected from the oxides, hydroxides and carbonates of calcium, titanium, barium, manganese, zirconium, thorium and silicon, with powdered base metal having a high melting point, making a suspension of the mixed materials, applying the suspension to the inorganic insulating material to provide a coating thereon, and sintering the coating on the inorganic insulating material to provide a surface of the base metal capable of receiving a solder, the sintering causing the material selected from said oxides, hydroxides and carbonates to form a layer bonding the base metal and the inorganic insulating material. No. 399,489. Canadian Westinghouse Company. (Hans Vatter and Heinrich Hinderer).

Dispensing device for detergent solutions. No 399,494. The Diversey Corporation (Canada) Limited. (Clark M. Moore).

Plastic composition comprising a polymerized vinyl aromatic compound for copolymer thereof and, as a plasticizing agent therefor, at least one cyclohexylated diphenyl ether wherein the number of cyclohexyl groups is from 1 to 6. No. 399,496. The Dow Chemical Company. (Toivo A. Kauppi, Kenneth D. Bacon and Frank B. Smith).

Alloy resistant to heat erosion consisting of carbon 1.50-3.00%, chromium 15-25%, silicon 1.50-3.50%, tungsten 0.50-4.00% molybdenum 1.50-7.00%, cobalt 25-45%, boron 0.50-4.00% and balanced by the addition of iron in an amount not less than 25% and not more than 45% of the total. No. 399,497. Eaton Manufacturing Company. (George Charlton).

Process of producing color photographs using a number ofsuperimposed silver halide emulsion layers. No. 399,503. General Aniline & Film Corporation. (John Eggert and Bruno Wendt).

Photographic fixing material for photographic elements having a barite layer and a light sensitive silver halide emulsion thereon. No. 399,504. General Aniline & Film Corporation. (Edith Weyde).

Process of making calcium sulfate which under X-ray and microscopic examination shows the crystalline structure of anhydrite. No. 399,516. National Lead Company. (Willis F. Washburn and Franklin L. Kingsbury).

Method of cold-reducing metal tubes characterized by the use of solid wax inside the tubing during the reducing operation as an internal support for the tubing. No. 399,517. National Tube Company. (John W. Offutt).

Process comprising reacting a 2-methyl-5-alkoxy-methyl-6-amino pyrimidine dissolved in a lower aliphatic alcohol with hydrogen chloride. No. 399,529. Research Corporation. (Gustav A. Stein).

Preparing hydroxy aromatic sulfides by bringing together a phenol free from carboxyl groups and a halide of a non-metallic element of Group VI into reaction at a temperature between 60 and 140°C. in an inert solvent boiling at the reaction temperature under reflux while removing the hydrogen halide formed. No. 399,532. Standard Oil Development Company. (Louis A. Mikeska and Eugene Lieber).

Producing alkyl derivatives of relatively stable hydrocarbons by subjecting the hydrocarbons to treatment with cycloparaffins having less than five carbon atoms in the ring in the presence of metal halides and hydrogen halides at temperatures below 15°C. No. 399,535. Universal Oil Products Company. (Aristid V. Grosse).

Hormone callicrein preparations prepared by autolyzing pancreas glands of animals, treating the autolyzate with a solution of colloidal iron oxide, and separating the solution from the residue of the autolysis and the precipitate caused by the iron oxide solution. No. 399,538. Winthrop Chemical Co., Inc. (Fritz Schultz).

Granted and Published September 30, 1941.

Gas-producer furnace. No. 399,559. Ovide Bouchard.

Dry pneumatic method of recovering precious metals. No. 399,571. Lyle McLean.

Baking synthetic metallic enamel composed of a mixture of finely ground metal bronze powder, other pigment material, volatile solvents and synthetic resins, said synthetic resins being in situ and consisting of alkyd resin and urea formaldehyde resin that is compatible with the alkyd resin and has the property of becoming more viscous on the application of heat, said urea resin being from 10-90% by weight of the total amount of said resins. No. 399,592. Acme White Lead & Color Works. (Glenn H. Hicks).

Heat exchanger. No. 399,593. The Air Preheater Corporation. (Wilbur H. Armacost).

Alloy steel adapted for tools and dies and containing carbon from 0.2-1.0%, chromium from 2-10%, silicon 0.5-2.0%, molybdenum from 2.5-5.0%, tungsten from more than 5% to less than 8% and at least one-third greater than the molybdenum, vanadium from 0.5-2.5% and the balance iron. No. 399,595. Allegheny Ludlum Steel Corporation. (Ralph P. DeVries).

Fluorspar recovery by flotation including the step of creating a fluoride lifting froth from a pulp having a pH greater than about 9. No. 399,598. Aluminum Company of America. (Nathaniel L. Shepard).

Glass resistant to hot, ionized alkali metal vapor when at a temperature of 300°C. No. 399,612. Canadian General Electric Company Limited. (Rudolf Schmidt and Walter Hanlein).

Moisture-proof wrapping film comprising a water-sensitive, non-fibrous base, a moisture-proofing coating, and an intermediate coating comprising the polymerization product of maleic anhydride and vinyl octadecyl ether. No. 399,613. Canadian Industries Limited. (Otto Herrmann and Philipp Muller).

Photographic film of low fire hazard comprising a smooth, continuous, film base of synthetic linear polyamide and a photographic sensitive layer carried by said base, said photographic film being substantially indifferent to atmospheric conditions of temperature and humidity, and characterized by substantial freedom om said base from hydrolysis under conditions encountered in practice, and by permanence on aging of the images formed in said sensitive layer. No. 399,614. Canadian Industries Limited. (Wallace H. Carothers).

Photographic film, non-inflammable and water-resistant, which comprises a photographic sensitive layer carried by a smooth, continuous, film base comprising essentially crystalline synthetic linear polymer-forming compositions, which melt without decompositions, and which is capable of being formed into fibers, showing by characteristic X-ray patterns orientation along the fiber axis. No. 399,615. Canadian Industries Limited. (Wallace H. Carothers).

Cellulosic film cast from an aqueous, alkaline, cellulosic solution, said film having a size thereon, said size comprising essentially an emulsion comprising a water-insoluble amide which is solid at a temperature of 25°C., sodium silicate, and a saturated fatty acid containing from 12 to 18 carbon atoms. No. 399,616. Canadian Industries Limited. (John D. Pollard).

Film forming composition comprising a cellulose derivative and, as a plasticizer, a monoaryl derivative of an amide of a fatty acid containing 6 to 10 carbon atoms and which are not moisture-proofing agents per se, said cellulose derivative being selected from the class which consists of cellulose esters, cellulose ethers and cellulose ether-esters. No. 399,617. Canadian Industries Limited. (James A. Mitchell).

Coating composition comprising a heat hardening urea-formaldehyde resin and from about 0.05-4.5% of chlorinated rubber. No. 399,618. Canadian Industries Limited. (William P. Colio).

Cellulosic structure, flexible, water-sensitive and durable, containing as a softener therefor a water-soluble ethanolamine salt of an alpha-hydroxy aliphatic acid containing 2 or 3 carbon atoms in the acid constituent. No. 399,619. Canadian Industries Limited. (Frederick M. Meigs).

Cellulosic structure, flexible, water-sensitive and durable, containing as a softener therefor a formic acid addition product of ethanolamine. No. 399,620. Canadian Industries Limited. (Frederick M. Meigs).

Manufacture of soap comprising the steps of forcing milled soap through a foraminous plate into an evacuated chamber to remove air and other gases, and plodding the soap, while maintaining it in a vacuum, to produce soap free from striations. No. 399,639. Colgate-Palmolive-Peet Company. (Julius A. Schwantes).

Process for the purification of manganese sulfate solution. No. 399,640. Consolidated Mining & Smelting Company of Canada Limited. (William H. Hannay and Basil J. Walsh).

Organic phosphate produced by causing a reaction between meta-xenol or para-xenol and a compound from the class consisting of phosphorous oxyhalides and aryl phosphoric acid di-halides and mono-halides, to form triaryl phosphate. No. 399,645. The Dow Chemical Company. (Edgar C. Britton and Shailer L. Bass).

Rubber vulcanizing process comprising vulcanizing rubber in the presence of a member of the class consisting of diaryl dithiocarbamic acids, their salts, and their esters and a member of the class consisting of mercaptothiazoles and dithiazyl sulfides. No. 399,660. The B. F. Goodrich Company. (Paul C. Jones).

Respirator mask. No. 99,661. The B. F. Goodrich Company. (Charles W. Leguillon).

Coating and drying apparatus. No. 399,662. Harbor Plywood Corporation. (Andrew B. Peterson).

Television glass-metal tube manufacture. No. 399,664. Hygrade Sylvania Corporation. (Victor H. Fraenckel).

Television glass-metal tube manufacture. No. 399,665. Hygrade Sylvania Corporation. (Victor H. Fraenckel).

Additional Canadian Patents Granted and Published September 9, 1941 will be given next month.